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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

A LECTURE on Breast-milk Feeding. By CATHERINE CHISHOLM, M.D. 425

A LECTURE on Tests for Cure of Gonorrhœa in Women. By J. JOHNSTON ABRAHAM, M.D., F.R.C.S. 429

ORIGINAL ARTICLES.

Auto-hæmo-therapy in Bacterial Infections. By S. G. BILLINGTON, M.B., B.S., F.R.C.S.—(*Illustrated*) 431

Anthelmintic Work in Egypt. By H. B. DAY, M.D., F.R.C.P. 435

CLINICAL AND LABORATORY NOTES.

A Case of *B. Pyocyaneus* Infection Cured by Vaccine Treatment. By H. RONALD CARTER, M.D., M.R.C.S. 437

A Case of Foot-and-Mouth Disease. By A. HUGH GIBBON, M.D.—(*Illustrated*) 438

A Case of Chorion-Epithelioma. By J. P. HEDLEY, M.Ch., F.R.C.P., F.R.C.S. 438

A Case of Trismus in Enteric Fever. By JAMES S. ANDERSON, M.D., D.P.H. 439

MEDICAL SOCIETIES.

Medical Society of London: Treatment of Fibroids of the Uterus 440

Royal Society of Tropical Medicine and Hygiene: Bayer "205" and Trypanosomiasis 441

Medico-Legal Society: Law of Nullity of Marriage . 442

Royal Society of Medicine: Combined Meeting of the Sections of Medicine, Neurology, Ophthalmology, and Otology: Vertigo 444

REVIEWS AND NOTICES OF BOOKS.

Diphtheria; Its Bacteriology, Pathology, and Immunology. By Frederick W. Andrewes, and others 446

Psychology and Morals. By J. A. Hadfield, M.A., M.B., Ch.B. 447

Anatomy and Physiology. By Prof. Jesse Feiring Williams, M.D. 447

Encyclopædia Medica: Vol. X., Obligate to Potash.. 447

Geriatrics. By Malford W. Thewlis, M.D. 448

Précis clinique et operatoire de chirurgie infantile. By L. Ombrédanne 448

Poison Mysteries in History, Romance, and Crime. By C. J. S. Thompson 448

THE CONDUCT OF MEDICAL PRACTICE.

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IX.—Certification in Insurance Practice. By LEONARD SHOETEN SACK 449

LEADING ARTICLES.

THE INCIDENCE OF RHEUMATIC DISEASES.. 451

BAYER "205" 452

INSURANCE DENTAL BENEFIT..... 452

MEDICINE AND THE EMPIRE EXHIBITION .. 453

ANNOTATIONS.

An Investigation of Child Life 454

The Leptospira Icterohæmorrhagiæ in Rats .. 454

Secondary Infections in Pulmonary Tuberculosis 455

The Functional Capacity of the Liver 455

Fundamentals of the Cancer Problem 456

Epidemic Dropsy in Calcutta 456

Inspectorships under the Board of Control 457

A Re-discovered Blood Corpuscle.—(*Illustrated*) 457

Diathermy in Anterior Poliomyelitis 457

The Salary of the Assistant Tuberculosis Officer ... 458

The Royal Society 458

SPECIAL ARTICLES.

Venereal Disease Abroad: The Impending Collapse of the Campaign in Germany.—Infection Statistics in Switzerland 459

Scotland: Edinburgh: Special Out-patient Clinics.—Public Health Administration 460

The Coördination of International Red Cross Activities 450

MODERN TECHNIQUE IN TREATMENT.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LX.—The Treatment of Nephritis: Acute and Chronic Forms. By Prof. HUGH MACLEAN, M.D. 458

CORRESPONDENCE.

Industry and Medical Service (Prof. Edgar L. Collis) 461

The Position of Psycho-Analysts (Drs. Major Greenwood and J. Norman Glaister) 462

Small-pox and Vaccination (Dr. A. B. Dunne).. 463

The Training of the Ophthalmic Surgeon (Mr. Freeland Fergus) 463

Doctors and Advertising (Mr. H. Wansey Bayly) 464

Leprosy: A Self-Healing Disease (Dr. Leonard J. Kidd) 464

The Exploitation of Nurses (Dr. Edmund Cautley).. 464

Variations in Susceptibility to Insulin (Dr. P. J. Cammidge and Mr. H. A. H. Howard)..... 465

Treatment of Liver Abscess by Aspiration (Lieut.-Colonel E. Owen Thurston)..... 465

Staple Holders for Roux's Operation (Mr. C. Max Page.)—(*Illustrated*).... 465

The Queen's Doll's House 476

Blood-supply of the Brain in the Ox (Mr. Bernard Gorton) 476

THE SERVICES.

Royal Naval Volunteer Reserve.—Royal Army Medical Corps 465

OBITUARY.

Sir Malcolm Alexander Morris, K.C.V.O., F.R.C.S.—(*With Portrait*) 466

Alexander Charles O'Sullivan, M.B. 467

Robert Thomson, M.D., M.Ch. 467

PARLIAMENTARY INTELLIGENCE.

House of Commons: Free Treatment of Venereal Disease.—Hospital Accommodation.—Royal Commission on National Insurance Service.—Leprosy in the United Kingdom.—The Influenza Outbreak.—General Nursing Council Rules.—Milk Regulations.—Deaths from Infantile Paralysis.—Spirochætosis among Miners.—The Tuberculosis Order, 1914.—Panel Patients in Public Institutions.—Suicide Statistics.—Ex-Service Men and Mental Disease.—Pensions Medical Staff.—The Standard of Overcrowding.—Machine-skimmed Milk for Infants.—Plight of the Hospitals.—Industrial Diseases.—National Insurance.—Poor-law Vaccination 468

MEDICAL NEWS.

Society of Apothecaries of London 471

Royal College of Surgeons of England 471

University of Bristol 471

St. Giles's Homes for Lepers in England 461

Hong-Kong University ... 465

Donations and Bequests .. 458

The Hospital System of Dublin 470

Hunterian Society 471

Rontgen Society 471

London School of Tropical Medicine 471

Rivers Memorial Fund ... 471

Royal College of Surgeons in Ireland 472

The late Dr. E. J. Dickinson 472

Oxford University Press .. 472

Metric System in U.S.A. . 472

British Science Guild 472

Fellowship of Medicine and Post-Graduate Medical Association 472

Edinburgh: Royal Medical Society 472

The late Dr. J. W. Mullen 472

Sussex Maternity and Women's Hospital 472

Decrease of Drunkenness in Rugby 474

NOTES, COMMENTS, AND ABSTRACTS.

The Administration of Benifits under the National Health Insurance System of England. By H. S. BEADLES, M.R.C.S. 475

Comparative Mortality in the Metropolitan Boroughs 476

"Acoustique" Electrical Aids for the Deaf 476

Appointments 472

Vacancies..... 472

Births, Marriages, Deaths 473

Medical Diary 473

DYSENTERY IN THE FEDERATED MALAY STATES. By **WILLIAM FLETCHER**, M.D. Camb., Bacteriologist, Institute for Medical Research, Kuala Lumpur; and **MARGARET W. JEPPS** Preface by Dr. A. E. HORN, C.M.G. Illustrated with 44 art paper plates. Cr. 4to. **10s. 6d.** net; postage 6d.

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The following theories of the immediate process of lactation are held.

Lane-Claypon and Starling[3] think particular substance passes from fœtus to maternal circulation—stimulating and inhibiting the action of the gland in producing the milk during pregnancy.

(1) Increased blood in circulation after fœtus is gone provides material which is then secreted by the breast whose activity, like other glands, is increased by extra supply of blood; or (2) particular substances in blood favour secretion either (*a*) by purely stimulating the gland or (*b*) are of actual food value—i.e., that the food of the suckling is a direct continuation of the process of feeding the fœtus. (Pfaundler in Sommerfeld's Handbuch.)

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"Epithelial cells take up material from the circulation and transform it into milk constituents, then discharge the altered substances into the lumina of the alveoli, and here the secretion is worked over into the finished product. The cells contribute from the chromatin and protoplasm part of their substance to the secretion and ultimately disappear. Part of the body fluid enters the gland ducts, which become distended and attract leukocytes, which, in turn, aid in the regeneration of cells partly by furnishing food and partly by removing degenerated cell substance. With the progress of lactation the leukocytic infiltration increases again, and at the end of lactation cell products are reabsorbed."

Gaines expresses the extent of our knowledge of the milk-flow in the following words:—

"During milking and nursing there is a reflex constriction of the gland; the removal of the milk from the gland is dependent upon the operation of this reflex; and the reflex is conditioned. The stimulation which naturally excites the reflex must be found in the friction and warmth of the sucking action of the young on the cutaneous sense-organs of the teat; with possibly a further source in the passive dilation of the sphincter muscle of the nipple by the passage of milk." Further: "Milking is a stronger excitant than an inserted canula; nursing is stronger than milking and direct action of pituitrin is stronger (*for the moment*) than nursing. Removal of milk from the gland is dependent upon this (nursing, &c.) reflex and it may be completely inhibited by anæsthesia. The psychic state of the mother modifies the strength of the reflex as shown by the flow of milk after absence of the young."

CHARACTER OF THE MILK.

The main constituents of normal breast-milk, as is generally known, are protein, lactose, and fat. Milk-sugar is only found in milk. If the milk gland is extirpated milk-sugar disappears from urine. Casein is a protein found nowhere in the body except in the mammary glands. There are two theories of its production: (1) enzyme action in gland, and (2) pairing of blood constituents and cellular material. The origin of lactalbumen is also obscure. From these proteins tryptophane, a split product of protein of especial value to growth, has been shown to be present in large proportions in both casein and lact-albumen, particularly in lactalbumen, the predominating protein in human milk (2·5 per cent. in casein, 4·0 per cent. in lactalbumen).

Milk-fat is not like body-fat. Heinemann says:—

It was formerly believed that milk-fat was the result of fatty degeneration of proteins, and that upon standing the quantity of milk-fat would increase at the expense of casein, but many observations have shown clearly that the composition of milk-fat is influenced by the fat in food. This fact has led to the belief that fat from food passes directly into the milk. However, this is not a necessary conclusion, because fat may be assimilated as body-fat and then reach the milk glands as such, or it may be broken down into building stones and then synthesised by the milk glands into milk-fat. In either case the resulting milk-fat would be dependent, in a measure at least, upon the original fat taken from the food and would have a similar composition. That such is the case is shown by comparison of the iodine number of body-fat, colostrum-fat—which is formed during a transition period—and genuine milk-fat.

The following table given by Engel, and taken from Sommerfeld's "Handbuch," illustrates the point.

It shows that while there is some difference between the iodine numbers of body-fat and colostrum, which might be expected, there is a much greater difference between body-fat and milk-fat. If the theory is correct that colostrum is a transition product between body fluids and milk, it would follow naturally that the fat of colostrum would also be a transition product. Extensive investigations by

[1] A post-graduate lecture delivered at the Manchester Babies Hospital.
[2] American Journal of Physiology, 1915, xxxviii., 285.
[3] Proceedings of the Royal Society, 1906, lxxii., 505.

Engel (quoted from Pfaundler in Sommerfeld's "Handbuch") have led to the conclusion that milk-fat is not identical with body-fat, but that, since the iodine numbers of milk-fat and body-fat are approximately proportionate, there must be a dominating influence of body-fat upon milk-fat. Milk-fat, therefore, is dependent upon body-fat, but is not identical with it. Consequently, body-fat is either not the exclusive source of milk-fat, or the milk glands transform the body-fat into milk-fat. Colostrum-fat, however, is nearly identical with body-fat, while later fat formation is influenced also by the character of the food. The composition of milk-fat may fluctuate, therefore, according to which one of the two sources is predominant. However, the influence of the source of milk-fat is limited, since it is known that each species of mammal produces milk-fat of characteristic composition, so we must assume that there is a standard composition of fat derived from the milk of a certain species. This standard is variable only within narrow limits.

Engel's Table.

Mammal.	Iodine number of—		
	Body-fat.	Milk-fat.	Colostrum-fat.
Cow ..	42·0	32·0	46·1 to 50·5
Goat ..	44·1	37·9	46·9
Sheep ..	45·0	39·0	46·8
Human ..	61·5	43·0	62·0
Dog	72·7	58·3	—
Ass	78·2	72·0	—

The source of milk-fat has been investigated by Jordan and Jenter in a carefully controlled experiment. Recognising that many previous experiments did not cover a sufficiently long period of time, these authors fed a cow for 95 days on a ration from which the fat was nearly all extracted. The cow

"continued to secrete milk similar to that produced when fed on the same kind of hay and grain in their normal condition. The yield of milk-fat during the 95 days was 62·9 pounds. The food-fat eaten during this time was 11·6 pounds, only 5·7 pounds of which was digested. Consequently at least 57·2 pounds of milk-fat must have had some other source other than the food-fat. The milk-fat could not have come from previously stored body-fat, because, (1) the cow's body could have contained scarcely more than 60 pounds of fat at the beginning of the experiment; (2) she gained 47 pounds in body-weight during this period of time with no increase of body-nitrogen, and was judged to be a much fatter cow at the end; (3) the formation of this quantity of milk-fat from the body-fat would have caused a marked condition of emaciation which, because of an increase in body-weight, would have required the improbable increase in the body of 104 pounds of water and intestinal contents. During the 59 consecutive days 38·8 pounds of milk-fat were secreted and the urine nitrogen was equivalent to 33·3 pounds of protein. According to any accepted method of interpretation not over 17 pounds of fat could have been produced from this amount of metabolised protein. The quantity of milk solids secreted bore a definite relation neither to the digestible protein eaten nor to the extent of the protein metabolism. In view of these facts it is suggested that the well-known effect upon milk secretion of a narrow nutritive ratio is due in part to a stimulative, and not wholly to a constructive, function of the protein."

The authors also state that "the composition of the milk bore no definite relation to the amount and kind of food" and that "the changes in the proportion of milk solids was due almost wholly to changes in the percentage of fat."

The results of Jordan and Jenter's experiment appear to demonstrate that food-fats bear no necessary relation to formation of milk-fat. Protein metabolism can account only for part of the fat secreted in the milk, and some of the fat must have been derived from carbohydrates.

The assumption appears to be justified that milk-fat is derived from four sources—namely, food-fat, body-fat, protein, and carbohydrate. It is the function of the milk glands to transform these substances into milk-fat, and they produce a fat which varies but little from a standard suitable for the food of a certain species. It is true that the chemica composition of milk-fat in the same kind of milk varies within limits, according to the kind of fat contained in the food consumed. However, such variations are not permanent, and after a short period the normal constitution of the fat is restored, even when a particular fat is eaten with the food for a long time.

ACCESSORY FACTORS PRESENT IN MILK.

Immunising Bodies.—These are also present, particularly in the colostrum, which emphasises the importance of breast feeding even where it can only be carried on for two or three weeks. At birth the child has no capacity for providing its own resistance to the invasion of foreign substances.

Vitamins.—Ferments (lipose, lactose). Slight, if at all (Lane-Claypon).

A review in 1917[4] of the variations in chemical composition during the first 11 days shows that the order of variation in any group of individuals and also in any individual from day to day is fat, protein, lactose.

1. For each constituent there is a production plane and this plane is fixed for the individual, independent of nutrition and is dependent on the individual.

2. Little can be done to alter the proportions of the constituents by feeding.

3. An increase or decrease in lactose is accompanied by a change in the opposite direction in percentage of fat and protein.

4. Protein mechanism is best regulated and less dependent on factors controlling fat and lactose than they are on each other.

Drugs Appearing in Milk According to Holt.—These are: Saline cathartics, arsenic, salicylates, belladonna in full quantities, opium in poor milk may be dangerous, iodides, bromides, and mercury after prolonged use.

VARIABILITY OF MILK.

Variability of milk is seen in:—

1. Difference in composition due to breed.

2. Difference due to individuality—a superior individuality is one capable of using food in quantity above that required for maintenance and using its excess for milk production (Eccles and Reid).

3. Difference in same individual,[5] (*a*) at different milkings; (*b*) morning and evening milking—fat is richer in morning than at night; (*c*) fore, mid, and stripping; (*d*) according to length between meals—after long intervals percentage of all constituents is higher.

4. Difference in individuals during lactation. Quantity diminishes at the end of lactation but the solids increase. Fat is most variable, but protein rises considerably. In humans total nitrogen content falls. Fat declines for three months, then is constant four to five and rises at the end in cows. Sugar declines at the end. With regard to materials in diet of mother affecting milk, mothers in the fourth century were not allowed to take salt, acids bitter or sweet, or anything with a strong or fragrant odour. The substances giving flavour are said by Myers to be purely aromatic acids.[6] Certain drugs are known to affect the milk of the mother. With regard to vitamins, McCollum and Simmonds have shown that unless the nursing mother is receiving a diet rich in fat-soluble A-vitamin the growth of the young is unsatisfactory, though for a time her body has a reserve store. The mother is able, for a time, to produce water-soluble B-vitamin from her reserve supply, though it is not in the food. They showed that inorganic salts also were necessary in her diet though, again, for a time she is able to draw on her own reserves. They point out "that the human mother should have in her diet a liberal amount of milk . . . and of leaf vegetables." It is not enough that the diet shall furnish enough

[4] Journal of Biological Chemistry, 1917, xxix., 381.
[5] See Heinemann, Milk, 1919, p. 106.
[6] Myers: American Journal of Obstetrics.

caloric value and enough protein and shall afford variety and palatability.

5. The influence of food is that when poorly-fed cows are placed on a well-balanced milk ration, production and quality are improved. But this change cannot go beyond the limit which breed or individuality is capable of producing.

$$\text{Nutritive ratio} = \frac{\text{carbohydrate} - 2\frac{1}{4}\text{ fat}}{\text{protein}}$$

6. Influence of weather is not of much importance. Fat and not fat solids are both down in summer. Fresh air and sunlight are of advantage.

7. Influence of exercise reduces milk and increases fat. Nervous influences are important. Worry reduces quantity, probably increases proteins, and decreases fat.

8. Skill of milker.

The foregoing shows the difficulty of attempting to alter the character of the milk by dieting. The following principles apparently guide the quality of the milk and the possibility of altering it for the child.

(*a*) That the main factor is the inherited nursing capacity of the mother and her individual type of milk which produces a certain ratio of fat, protein, and carbohydrate.

(*b*) That, within limits, she draws on her own body tissues for the sake of the child and even if underfed for a time produces a fair supply.

(*c*) The normal quantity is only increased by administering to her a properly-balanced diet of sufficient quantity if she is underfed. If she is overfed and under-exercised her health suffers and so does the quality of her milk.

(*d*) The later part of the feed is richest in fat and consequently, for a time, the diet may be increased or limited in fat by totally exhausting the breasts or feeding light on the two breasts rather than emptying one fully.

(*e*) That as a longer interval between milking gives a lower fat-content, the food can be varied in this way.

(*f*) That the administration of fats, such as linseed oil, cod-liver oil, &c., for a time increases the fat-content of the milk, which, however, fairly soon settles down to the mother's normal, and the continued value of the administration of large quantities of milk, of oatmeal, and of cod-liver oil is probably in the vitamin and salt-content of the food (which McCollum has shown is transmitted to the child and which contains growth-producing powers) rather than in the improvement of the fat or protein constituents.

(*g*) That the supply in quantity depends to a certain extent on the demand. Budin shows this very clearly. If the breasts are well emptied the supply keeps up—if the demand is lessened the quantity diminishes.

Thus, even if the character of the milk is investigated, little can be done to alter it by dieting a well-fed mother. The examination of the milk is of most importance in order to know what the baby is having and to guide any supplemental feeding. As Hess, of Chicago, says, "No baby should ever be deprived of its mother's milk only because of the results of a clinical examination of the milk."

When examining milk we must note at what time of day it is taken, and see that a whole milking is taken, or that first and last portions are mixed, or that the infant is allowed to nurse not more than two minutes, and a sample is then taken.

Next we must consider the child's part in sucking before going on to the practical application of these facts in the method we adopt for breast-feeding. The sucking apparatus consists, according to Feldman,[7] of the tongue, the hard and soft palates, the two cheeks, the uvula, the gums, and the lips. The pad, or so-called suction cushion, of fat is within the cheek and is the size of an almond and remains even when the child is very emaciated. Auerbach [8] believes that the cheeks are passive and that their indrawing is due to change of pressure inside the mouth. He thinks the nipple is grasped and compressed by the hermetically closed lips, the jaws, and the tongue, whilst the naso-pharynx is shut off behind the uvula. The depression of the lower jaw, with the consequent sinking of the floor of the mouth and tongue, increases the longitudinal diameter of the oral cavity and creates a diminished intra-oral pressure. In this way the milk is drawn into the mouth as the result of compression of the nipple as well as by the negative pressure. Basch found, by means of a special dynamometer, that the force of compression by the jaws is equal to 100–300 g. during the first few weeks of life and to 800 g. in children a few months old. He further determined, by means of a manometer, the suction energy of the child and the pressure under which the milk flows from the breast of the mother, and he came to the conclusion that without compression of the nipple by the lips and jaws the negative pressure alone is not sufficient to overcome the muscular tone of the nipple. Cramer disagrees with that opinion and believes that the aspiration force alone is quite capable of drawing the milk from the breast. The question is not altogether of academic interest. It has some practical importance, inasmuch as in the choice of a wet nurse it is desirable that the pressure required to draw off the milk from the woman's breast should correspond with the suction energy of the infant.

Cramer found that it took a baby five minutes to empty a bottle of 100 g. of milk under pressure of 5 cm., whilst a breast baby sucked 50 g. in 30 minutes under pressure of 50 cm.—i.e., the breast baby did 60 times the work of the bottle baby for half the result. Gundolme, quoted by Feldman (p. 451), found work of bottle baby : breast baby :: 1 : 11. This work of suction calls on (1) salivary secretion, (2) the use of muscles of jaw to help growth of bone.

Capacity of Stomach.—Pisci and Le Wald [9] showed the stomach emptied in three hours. The speed varied with quantity and quality of food. Willox [10] found in gastric radioscopy in children that (1) the shape of the stomach alters in digestion, and (2) the average time of emptying is 3¾ hours—the more fluid the food, the quicker being its passage through the stomach. Holt gives the capacity of stomach at birth as 1·2, at 2 weeks 1·5, and at 4 weeks 2·0. X ray examination shows that during a meal the milk spurts into the duodenum before the meal is finished, this being more commonly the case in naturally-fed babies than in artificially-fed babies.

Jefferson [11] has well shown how this takes place by describing the musculature forming a funnel for the direct passage of fluid on to the pyloric orifice. Observation on the amount of milk taken at a feeding by the normal breast-fed babies shows that the milk must pass directly on through the stomach, for the supply taken is greater than the capacity of the stomach. An infant of one month growing rapidly and on four-hourly feeds may take 6 oz. at a feed.

PRACTICAL APPLICATION.

Mothers feeding infants should have a full, well-balanced diet of the amount to which they are accustomed and containing milk and green vegetables. They should have plenty of fresh air and sufficiency of exercise which does not fatigue, an adequate amount of sleep, and no worry. The feeds should be given at regular intervals. The breasts should be prepared beforehand by painting the nipple with spirits and very gently drawing it out so that the erectile tissue may be developed. When the child is born it ought to be put regularly to the breast at fairly frequent intervals both to stimulate the milk and to involute the uterus, but the mother ought not to be unduly tired. For the first two days she may be full of aching pains. The intervals should be four-hourly the first day, then every 2½ hours till the milk is

[7] The Principles of Ante-natal and Post-natal Child Physiology, p. 448.
[8] Du Bois Raymond's Archiv f. Physiol., 1888, lix.
[9] Trans. Amer. Pediat. Soc., Chicago, 1913, xxv., 150–165.
[10] Practitioner, 1915, xcv., 599.
[11] Journal of Anatomy and Physiology, 1915, 165.

coming well. As soon as possible the child may then be put on three-hourly feeds, and if strong, on four-hourly feeds. If the milk does not come the child should be given a little sugar-water after it has exercised itself on the breast, but it must not be given the sugar-water first as it needs a hungry child to pull well. The child, however, must not be left hungry long or it loses patience with the breast and also begins to lose energy itself. A child does not bear long starvation, especially if it is very tiny.

The child should be wakened to be fed at the proper time. As a rule, one breast only should be given, but under the following circumstances both may be given: (1) during the first few days to stimulate secretion; (2) to weak babies; (3) to overfed babies, so that they do not empty the breast, and get a meal light in fat; (4) where the milk is failing, so that the full stimulus may be exerted and because it needs both breasts. In this case the first must be thoroughly emptied and the second used first at the next meal. Dr. Lucy Naish describes the aversion or predilection of the child to one breast, which partly accounts for some children getting more at one than another meal. She also points out the proper position of the child when nursing—namely, lying across the mother who has a pillow under the arm supporting the child. This gives a slightly raised position to the chest and head of the child. This, in my opinion, is an important point where there is any tendency to vomit, as it allows the air bubble in the stomach an opportunity of escape. The child should not be allowed to take the food too quickly, and an opportunity for allowing air from the stomach to escape should be given by raising the child once or twice during the meal. If the child is very weak and cannot pull on the breast the milk must be drawn off and the baby fed with a bottle or Breck feeder rather than a spoon in order that his muscular powers of suction may increase. If he is too weak, of course, a spoon or pipette is necessary. If the nipples are very poor, again milk must be drawn off by a pump or a nipple-shield used till the nipple improves. As the child is fed and grows stronger it will be able to pull on the breast. The attempt to breast-feed ought not to be given up readily. I have known it take a month to really establish breast-feeding, which has then gone for five months without trouble.

Fats.—Lactagol will for a time enrich the milk and may for longer encourage the flow but the primary enrichment soon goes. Massage, hot douches, and sinusoidal electricity can also be of value to assist in keeping the supply of milk. The technique of electrical treatment is as follows: Gentle massage for ten minutes with the hands oiled and well soaped in hot soapy water, only using a kneading movement, avoiding the nipples. Remove traces of soap, &c., with warm water, dry the breasts, and apply faradism. Use fairly large lint pads soaked in warm water—having cut out centre of pad to avoid touching nipples. Use a piece of metal gauze as electrode, also with centre cut out; fix with bandage. Give just enough current for patient to feel a pricking sensation. Give on alternate days, beginning with 10 and increasing to 20 minutes.

As to quantity—"Let the child on the breast drink according to its appetite" says Variot—and this is wise within limits. If the child is progressing satisfactorily it is sound advice. The child will take very different amounts at different hours in the same day, six ounces at one feeding and two ounces at another. The breast-fed child is, on the whole, more likely to suffer from under-feeding than over-feeding. On the other hand, some children do appear to demand too much food, with consequent sickness.

As to time, the child gets all the milk it is going to get in the first few minutes. It is useless to leave it for a long time in order to get more. It is, of course, necessary for it to empty the breast in order that the supply may be preserved, so it does not do to hurry the child too much. Smith and Merritt [12] conclude that a normal baby who gets milk from one breast needs to be nursed only from six to eight minutes, rarely from 10 to 12 minutes.

A baby on both breasts may be nursed from six to eight minutes on the first, and from five to seven on the second. Actual weighing times observed by myself on a month old baby weighing under 9 lb. were: 2 oz. in first 2 minutes; 1¾ oz. in second 2 minutes; ¾ oz. in third 2½ minutes; none in fourth 2 minutes. Other breast: 1¾ oz. in first 2 minutes; ¾ oz. in second 2 minutes. Total 7 oz. in 12 minutes.

It is interesting to note the slower rate for second breast due, presumably, to lessened desire for food. When breast-milk is failing try supplementary feeds after the mother's feeding in order to keep up stimulation by emptying the breasts. In the case of difficulty with an infant who will not take the bottle after the breast at first, he must be taught the use of the bottle if necessary when hungry, the milk of the mother being thoroughly expressed later, if necessary, by the hands or the pump.

FOSTER-MOTHERS.

That breast-milk from a foster-mother is the next best feed to mother's milk goes without saying. So in a hospital such as this Babies' Hospital the presence of nursing mothers is invaluable for the most sick infants. In the choice of a mother appearances are very deceptive. The most promising looking nurses in our experience have not proved to be the best. Observation of her supply is the only means of forming a judgment. Our best mother was a poor-looking specimen who has grown young-looking and well in hospital, and proved a very satisfactory foster-mother. Her baby is now 12 months old and she is still regularly giving us 31 oz. per day. It is, of course, essential that the mother should be carefully examined and her history and character known. We have, in this hospital, largely followed what seemed to me the exceedingly practical methods of Dr. Fritz Talbot, of Boston. Mothers are chosen carefully and examined by ordinary clinical methods, and blood tests are taken.

The mother brings her baby with her for three reasons: (1) it has first claim on its mother's milk (in New York the foster-mothers' children deprived of their mother's milk had a high mortality) and the child taken with the mother gets some mother's milk, mother's care, and supervision; (2) it keeps the mother happy and content, for she sees her baby does not suffer from her service to others, and she is earning her bread and still doing her duty to her own child; (3) the good condition of her child is some criterion of the value of her own milk.

The child has three feeds from its mother each day. The rest of the milk goes to the hospital. The mother does not, as a rule, suckle the foster children, lest by any chance any of our infants prove to be syphilitic. As has been shown, it is better, both for mother and child, where there is only one nursling and where mother and child are both healthy, that the mother should feed it naturally and directly on the breast. But in a hospital such as this the milk is very precious. We have found, time after time, that the substitution of one or two breast meals a day may make a difference in the progress of a very dyspeptic case where more milk cannot be spared. Experience shows that the psychological effect on English women of nursing several babies is to produce dislike, nausea, and a suppression of the milk. We therefore arrange for the milk to be drawn off. The whole arrangements for these women are in the hands of the sister who superintends the preparation of the feeds. She teaches the women to draw off the milk. They each have a tray with all the necessary implements which are kept scrupulously clean. They are taught to clean their hands. Special nursing overalls are supplied to them and their hygienic arrangements supervised. Their milk is tested from time to time. Their own health is carefully watched. Our mothers have been healthy and well the whole of the time.

[12] Arch. Pediat., N.Y., 1922, xxxix., 371–373.

We have had five mothers in the hospital since March 1st last year. At first the mothers were paid £1 a week, now they are paid 10*s.* a week. Each mother does domestic work in the hospital to the value, according to the matron's estimate, of 10*s.* a week. Each mother supplies from 27 to 31 oz. of milk per day besides the milk for her own child. According to Budin, the milk varies with the number of nurslings. Our mothers have been fairly constant in their supply, but that is because the number of nurslings has not varied. The full amount of milk available has been drawn off and distributed as required.

METHOD OF FEEDING.

It must be remembered that a much less quantity of breast-milk may be sufficient for a child's feed than if a cow's milk dilution feed were used. A premature child may need only eight ounces of breast-milk per day. A very delicate child may not be able to digest full human milk. Budin found this out and used to give pepsin powder to some of his infants before the meal. We have not done this, but we have frequently had occasion to dilute the milk, and have found that food tolerance can be over-balanced by a too high feed of breast-milk just as seriously as when giving a cow's milk feed. When the child is taking from the breast directly the feed can be limited and water given just before the feed or Budin's plan of the pepsin powders may be attempted. Before weaning is resorted to in cases where the breast-milk is said not to suit the digestion of the child and these methods have failed, the milk can be drawn off and diluted. Where dilution has taken place, and where it is obvious that more sugar can be tolerated, sugar of milk may be added in the proper proportions. Occasionally the feed has to be given by the spoon, pipette, or Breck feeder, and in some cases it is well to "gavage" some of the feeds each day to save expenditure of energy in a very delicate child. Gavaging is easy in the premature infant.

A Lecture

ON

TESTS FOR CURE OF GONORRHŒA IN WOMEN.

Delivered at the London Lock Hospital on Feb. 22nd, 1924,

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I AM constantly being asked by the patient, or her doctor, or someone interested in the work, how one knows when a woman is cured of gonorrhœa; and I have to confess that it is often a most difficult question to decide, because the two most sensitive testing media we know of are debarred us experimentally, although they are essential to an absolutely definite reply. These two media are the mucous membrane of the male urethra and the conjunctiva of the child. They will detect the gonococcus when every other test fails; and it is unfortunate, from our standpoint, that the reliability of all the other tests we apply are finally judged mainly on the reactions of these two media, for, when the question of cure arises in a young woman, we are really being asked: (1) If the woman resumes connexion will she, or will she not, infect a partner previously free from the disease? (2) If she becomes pregnant, is the child at birth exposed to the risk of gonococcal conjunctivitis?

In women past the child-bearing age only the first question matters; and even that is often of minor importance, for what usually then concerns her is that she should be assured that she will not suffer from any of the chronic sequelæ, urinary, genital, or metastatic, which are the consequences of inadequate or unsuccessful treatment.

CERTAINTY OF CURE WITH PROPER TREATMENT.

What are we to say to a woman in either of these categories, and what tests can we apply to help us to a definite decision? The belief, probably first enunciated by Noeggereth, that when a woman becomes infected with the gonococcus she never gets rid of it, has been accepted and supported by many gynæcologists since his time; but it is quite untrue. Women, properly treated, can recover completely from gonorrhœa without a trace of after-effect. The gynæcologist sees the failures, not the successes, and judges accordingly. His mental state is similar to that of the neurologist, who, seeing case after case of tabes or general paresis, and influenced by the continual drip suggestion, comes to the conclusion that syphilis is incurable.

Another factor that has helped to make the belief in the incurability of the disease in woman so prevalent is that, whilst men have had skilled treatment for gonorrhœa for many years, the treatment of women for this complaint has been largely in the hands of physicians who have had no special training in the work. Their methods of attacking the disease have, in consequence, been perfunctory in the extreme, and their standards of cure totally inadequate. In addition, there is the ever-present shadow of the prostitute, always stopping treatment as soon as obvious symptoms disappear, and invariably becoming reinfected, if by any chance she has ever been cured. Following her, in a lesser degree, is the average out-patient, continuing her ordinary sexual life all the time she is undergoing treatment, probably with the husband who gave her the disease, and who himself has never been cured. To those who have to handle patients of this description, pessimism is natural; it could hardly be otherwise. And most of the literature dealing with the subject, especially on the continent, is derived from this source.

In private practice, however, and in an institution like the Lock Hospital, where a patient can be segregated for months, things are vastly different. Given proper treatment a cure can be effected in average cases in some three to six months. In acute cases, seen from the start, one can often effect a cure in two months. Such results conduce to a reasonable optimism.

One of the pitfalls of practice is the habit of treating patients as if they lived self-contained lives. They do not. It is useless promising a wife permanent cure unless one is certain her husband is free from the disease. No stringency of test can overcome this difficulty, and recurrence after passing successfully all known tests is not necessarily due to failure of the tests. Nothing, obviously, can be promised if there is any sign of disease in the husband. These points, self-evident when pointed out, are not always remembered; and when a case will not clear up, or recurs after apparent cure, one should insist on examining the husband, if this has not already been done.

Remembering all these precautions, one may now proceed with a chastened optimism to consider what is an adequate standard of cure, one which will be sufficient for general use, and not too elaborate to defeat its own ends by setting up an ideal impossible to attain. Such tests will obviously depend upon: (1) clinical signs; (2) bacteriological results; and (3) possibly serological findings.

CLINICAL SIGNS.

The first criterion, then, is that all clinical signs of the disease must have disappeared. By this is meant: (1) That there is now no induration of Bartholin's glands, or sign of inflammation around their orifices; (2) that the urethra, similarly, appears normal on inspection externally, palpation through the vagina, and urethroscopic examination; (3) that the para-urethral crypts, especially Skene's tubules, show no inflammatory signs; (4) that the vaginal introitus is

normal in colour, with no inflamed tags or crypts around it, and that pain is not complained of when a speculum is passed; (5) that the cervix appears normal, the secretion clear, and no erosion is present; (6) that the uterus and tubes, on bimanual examination, are apparently free from disease; and (7) that the anal orifice seems normal, and there are no signs of inflammation or discharge in the anal canal on passing a speculum.

BACTERIOLOGICAL SIGNS.

The second essential desideratum is that all bacteriological signs of disease should be absent. Evidence on this point can only be accepted if the following technique, and the precautions mentioned below, are observed when making the examination:—

(1) Smears, taken from the urethra by means of a sterile platinum loop inserted half an inch down, should be negative for pus cells and gonococci in a patient who has had a provocative injection of 1 c.cm. gonococcal proteose 24 hours previously. The urethra should have been massaged gently forward before the loop is inserted, and the surgeon should have assured himself that the patient has not passed urine for some hours before examination. (2) The urine, held for some hours before examination, should be clear, acid, free from albumin, and contain no gonococci, or pus, when the centrifugalised deposit is examined under the microscope. (3) Smears taken from the orifices of Bartholin's glands and from Skene's tubules should be negative. (4) Smears taken from the cervix by means of a platinum loop should be negative, for gonococci and pus, when taken before menstruation, just after menstruation has ceased, and 24 hours after a provocative injection of 1 c.cm. gonococcal proteose. (5) Smears taken from the anal canal should be negative for the gonococcus. The anus is a fruitful source of reinfection. Gonococci can often be found there when they are absent elsewhere in women. Surgeons dealing with men only frequently forget this. Gonococcal infection of the anus and rectum in men is rarely seen, except at a hospital dealing with diseases of the rectum. I saw three cases in one year at the Gordon Hospital. It is very uncommon at the Lock Hospital in men. I have seen only one case there in the last five years. This, of course, is due to the fact that anal gonorrhœa in men is generally due to unnatural practices. In women, however, the cause is quite different; the disease is gravitational and, if looked for, it is surprising how often one finds it. When vulvitis is present, or when there is a history of recent vulvitis, it is the rule rather than the exception to find gonococci in the anal smear.

I have always been averse to the use of irritating applications of silver nitrate to the urethra at any time, especially when they are done to provoke discharge in the hopes of thereby finding the gonococcus. The method seems to me to savour of barbarism, and to be clinically unsound. Since the discovery of the value of a provocative injection of gonococcal proteose, or "residual" vaccine, it appears to be quite unjustifiable. In the cervix, however, the same objection cannot be maintained; and, if in doubt, or if a provocative dose of vaccine, or proteose, is not available or convenient, it may be used. It will be noted that I have said nothing about attempting to grow the gonococcus from smears in women. That is because I have been painfully impressed with the uselessness of the method. Time and again, in my experience, cultures have been negative for the gonococcus when smears have been positive, because organisms such as staphylococci grow so rapidly as to smother any gonococcal colonies which may be present. Anyone who trusts, therefore, in a negative cultural report alone, in a woman patient, is living in a fool's paradise. There is, of course, no objection to having cultures made in addition to smear examination, and in private practice it may often be advisable, as a positive report, when present, strengthens one's position. But in a large clinic, where thousands of examinations have to be made yearly, where all the facilities are available, where skill in growing the organism is at its maximum, the proportion of successful cultures is so small in women that to my mind it is a waste of a skilled pathologist's time to order them. I therefore never use cultural methods in women, except when examining for cystitis, pyelitis, or systemic infection. In men, however, cultural methods have much greater chances of success, and none of the above remarks refer to them.

SEROLOGICAL TEST.

To the clinician, anxious not to make a mistake that may have disastrously far-reaching effects, the theory of the complement-fixation test (C.F.T.) is intensely attractive, especially when his patient is a woman; for many of these patients are brought for examination having no idea what is suspected to be the matter with them—the word gonorrhœa is never mentioned. If such a simple procedure, therefore, were possible as taking a specimen of blood from the arm, sending it to a pathologist, and on his report being able to say definitely this is, or is not, a case of gonorrhœa, or this case is now clear of gonorrhœa, the surgeon concerned would be only too thankful to adopt it. Gone would be the careful and exhaustive physical examination, the instrumentation, the taking of smears from half a dozen places, at intervals spread over half a dozen months, the cautious prognosis, even then, if everything appears satisfactory. Gone would be all the worry and anxiety, both for the patient and her medical attendant. But, alas, it is not possible. The golden road to an easy prognosis is not yet. A patient may have a profuse gonococcal discharge, and yet give a negative C.F.T. for the first two or three months of the attack. On the other hand, a case may have cleared up completely, and yet the patient may give a positive C.F.T. when all infection is over. Even the advocates of the method admit this, as antibodies do not develop sufficiently rapidly in the early days of the disease to influence the reaction, and they persist for months after active disease has ceased, and so give a positive result. Theoretically, the test should become negative three months after infection has ceased. But does it? From observations I have made I very much doubt it. It seems quite unreliable if a patient has ever had a course of vaccines—a very great drawback in these days, when nearly every patient has had at least one course of vaccines at some stage of her disease. It may still be positive when a patient has resumed normal married life, had no signs of metastatic trouble, and given birth to a perfectly healthy child to a second husband who is himself free from the disease—a combination of circumstances not infrequent, on account of the re-marriage of war widows. I have known it positive four years after all symptoms had disappeared. That might mean, of course, that there was a hidden focus keeping up the supply of antibodies. If so, it was so hidden that for ordinary marital life it could be neglected; and in this particular case I asked myself the question: Was it fair to debar the patient from marriage simply on a positive C.F.T. with no other symptoms? I came to the conclusion it was not. Results have justified that conclusion.

VALUE OF THE COMPLEMENT-FIXATION TEST.

Personally, I was greatly attracted by the test at first, and commenced using it with a distinct bias in its favour. For over a year I tried it on every woman who came up to the out-patient department of the Lock Hospital, either for treatment or for a test of cure; and at the end of that time, on considering my results, I felt compelled to abandon it as a routine. Three conclusions, I think I may safely say, I was able to deduce from my experience:—

1. That, in the acute stage of a urogenital infection, the C.F.T. was useless as a means of differentiating between a gonococcal and a non-gonococcal infection. This, of course, only confirmed what was already known.

2. That, if a urogenital infection had existed from two to six months, then a negative C.F.T. indicated that the disease was non-gonococcal, and this would be confirmed by the bacteriological tests—in other words, the reaction is specific. This also agrees with previous findings.

3. That if a positive C.F.T. is present a year after all clinical and bacteriological symptoms have disappeared, it may be neglected for practical purposes. There may, of course, be some hidden focus tucked away somewhere which will perhaps produce a gonococcal iritis years later, but it is impracticable to debar a patient from marriage on that account. All clinical observers will, I think, agree with me here.

The truth, then, is that in the early stages of gonorrhœa the test is not sufficiently powerful to diagnose the disease, in the middle stages it will differentiate between gonococcal and non-gonococcal disease, and in the convalescent stage it is too delicate for use as a practical sign of cure.

SUMMARY.

I would say then, that, with the present technique, the complement-fixation test, as an indication of cure, if positive when all the other tests are negative, may be neglected, and one should rely for practical purposes on the two previous sets of tests, clinical and bacteriological. If these tests are negative, the patient should be asked to return in two months, and the tests repeated. If again satisfactory, the same procedure should be repeated in four months. If, at the end of six months without treatment, the patient still shows no sign of return, clinical or bacteriological, I think we may safely assume she is cured. A year later, if a repetition of the tests is negative, she can safely resume marital life.

That is the standard of cure at which I aim. It is not too high or too difficult to attain. It leaves, of course, a little element of uncertainty; but anything more, to my mind, would be an impossible ideal. If fresh manifestations show themselves after such a series of tests, either the method of testing is at fault or the patient has acquired a fresh infection. Before assuming the tests were inadequate one should remember that a moral twist cannot be cured by surgical means. A lot of the pessimism about the curability of gonorrhœa in woman is due to a failure to recognise this fact.

AUTO-HÆMO-THERAPY IN BACTERIAL INFECTIONS.[1]

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SOME six years ago I began an investigation into the therapeutic possibilities of the blood as a result of two phenomena observed in France during the war, and the following are preliminary notes upon it.

1. In the autumn of 1916, at a Base Hospital to which I was bacteriologist, a small epidemic of lobar pneumonia occurred. A pure culture of a pneumococcus was obtained from the blood in one of these cases, and a sensitised vaccine made by Besredka's method with anti-pneumococcal serum. The extraordinary response in every case of this small series of 10 or 12 convinced me that a specific remedy for pneumonia existed, and to obtain it two problems had to be solved: (*a*) The causal organism must be obtained quickly and with certainty, and (*b*) a rapid method of making an artificially sensitised vaccine must be found.

2. Hundreds of bacteriologists had been investigating the blood in trench fever. The results in all cases were negative, and no virus was grown or demonstrated in films. From this mass of negative work, however, two facts emerged: It was proved (*a*) that the blood transmitted the disease, and that the whole blood and various parts of the blood contained the causal virus; and (*b*) that the disease could be transmitted by the excreta of the body louse.

In view of these two established facts with regard to trench fever, one was forced to come to the conclusion that the blood contained the causal virus, and not only contained it, but must contain it in large numbers if the body louse could extract sufficient to transmit the disease. In the present communication I shall describe how coccoid-like structures can be produced from the blood in from 10 to 60 minutes, and how these emulsions can be utilised in the treatment and diagnosis of bacterial infections. The unit of blood taken is one drop from a fine hypodermic needle. The blood is collected with aseptic precautions from any convenient vein, usually in front of the elbow, an all-glass hypodermic syringe being used.

During the last few years the coccoid structures described have been produced from whole blood and washed cells in a variety of ways; but the following three media have been selected as the most suitable for routine work:—

1. Doubly distilled water containing 0·5 per cent. ammonium carbonate.
2. Peptone (Witte's or Fairchild's), 2 per cent.; sodium chloride, 0·5 per cent.; ammonium citrate, 0·05 per cent.; calcium citrate, 0·02 per cent.; distilled water.
3. Peptone, 2 per cent.; Lemco, 0·5 per cent.; ammonium citrate, 0·05 per cent.; tap water.

In preparing Nos. 2 and 3 the citrates are not added until the other constituents have been dissolved and steamed, and if the reaction of the peptone or broth is acid it should be made just neutral to litmus. Witte's peptone usually gives a neutral reaction, but Fairchild's is generally acid. The media are neutral citrated solutions, and are finally sterilised by steaming for half an hour on three consecutive days. The ammonium carbonate distilled water is sterilised by steaming for 10 to 15 minutes on three consecutive days, and should not be kept for more than two or three weeks as the salt appears to slowly dissociate. Medium 1 produces immediate and complete hæmolysis; 2 and 3 contain just sufficient salt to prevent hæmolysis. The quantity of medium taken per tube is about 3 to 6 c.cm., and one drop of blood from a hypodermic needle introduced. The tubes are then rotated gently to diffuse the blood in the medium and placed in a water-bath at 58°–60° C. In from 10 to 20 minutes the contents of the tubes become turbid, and a few minutes later milky. Films made of the emulsions show innumerable coccoid bodies of varying size, many arranged in pairs or short chains of four. In the citrated media these bodies are less discrete, and masses of them can usually be found at the edges of the film. Red cells in all stages of disintegration are also seen. These coccoid bodies do not stain readily with the basic dyes unless an acid mordant is first used, 5 per cent. tannic acid being the best. They are generally Gram-negative. They take up the pink with the Romanowski stains direct, but the blue after free use of tannic acid. Before describing the manipulation of the emulsions of these coccoid bodies to convert them into therapeutic agents, I must briefly describe the technique that I have used for making vaccines during the last four years.

Technique Used in Making Agglutinated Vaccine.

The emulsion of the organism is made in ordinary neutral bouillon, and may be made from either solid or liquid media; it is diluted down to one of about 2000 million organisms per c.cm., and is heated for about 10 minutes in a water-bath at 60° C. The essential point of this stage is to get the organisms as discrete as possible, and this is by no means easy with some of the streptococci and other organisms prevalent at the present time. About 4 c.cm. of this emulsion are then transferred to each of a number of large tubes containing about 25 c.cm. of sterile normal

[1] A paper read before the Midland Medical Society on Feb. 27th, 1924.

saline. The diluted emulsion is then heated for 10 minutes in the water-bath at 60° C., about two-thirds only of the emulsion being submerged in order to obtain effective mixing convection currents. One drop of 2 per cent. NaOH is then added to each tube, and the heating at 60° C. continued for another 10 minutes. Four or five drops of 2 per cent. NaOH are added to each tube, the Bunsen heating the water-bath removed, and each tube rotated to hasten the mixing of the caustic soda. Two drops of liquor ammoniæ fort. are added to each tube, which is rotated and replaced in the cooling bath. The diluted emulsion in the saline becomes slightly milky on the addition of the caustic soda, this increases on the addition of the ammonia, and in a few minutes the tube contents resemble in appearance a positive macroscopic agglutination. A white flocculent precipitate settles to the bottom of the tubes as the water-bath cools. The deposits are washed twice in sterile normal saline in a water-bath at 55°–60° C., and finally in 0·5 per cent. carbolic saline, from which the vaccine is diluted to the required strength and bottled in carbolic saline. A film made of this deposit shows the bacteria agglutinated to varying extents and lying in a homogeneous material. The bacteria are black or red according to their Gram reactions, and the matrix is stained light red.

Standardisation of Dose.

The number of organisms per c.cm. is estimated before the agglutinating process is applied, and 12 c.cm. of an emulsion containing 2000 million per c.cm. will give a total of 24,000 million in the final product. I aim at a standard strength in the vaccine of about 1000 million per c.cm., but if the technique is right a variation of a few hundred millions is immaterial. In my experience the correct dosage for any individual patient must be found by commencing on the small side and increasing the dose until a satisfactory response results. The dosage in the case of vaccines is even more elastic than in the case of drugs where a wide range is universally recognised. It is not within the scope of the present note to enter into details as to what may or may not happen during the preparation of an agglutinated vaccine as described; but if I give briefly a hypothetical explanation it may be easier for any bacteriologist who wishes to make vaccines by this method to do so. The bacteria should be regarded as being surrounded by a homogeneous material that we may call the bacterial matrix. This matrix consists of an outer toxic portion, which is a nitrogen containing fat or lipoid, and an inner portion which is protein.

The objects aimed at in the preparation of the vaccines are threefold: (1) The production of a discrete emulsion, so that each individual organism is completely exposed to constituents dissolved in the emulsifying fluid. (2) The removal of the lipoid by weak caustic soda which is a fat solvent and forms a soap. The temperature varies from 56°–64° C. for different organisms. (3) The precipitation of the protein element of the matrix by the addition of more soda and then ammonia. Before precipitation the bacterial protein should have become saturated with lime, taken up from the broth and saline constituting the diluting medium. The supernatant fluid is a toxic soapy solution, and the precipitate consists of clumped bacteria lying in a lime-protein structureless matrix. I do not put forward this explanation with any claim that it is what actually happens, but merely as an intelligent objective, and if the technique is carried out according to it the desired end-product will be obtained. The two most important factors are the production of a discrete emulsion and the using of a broth and saline with a suitable lime content. If the emulsion contains clumps of organisms, these will appear in the vaccine with toxic centres, which have neither had the lipoid removed nor the protein saturated with lime. The lime-content of the saline I shall deal with later.

In watching the clinical results following the use of vaccines which are supposed to produce no reactions three very definite facts can be observed: Such vaccines (1) may produce all the beneficial results without any of the preliminary unpleasant or dangerous disturbances or reactions; (2) may be apparently inert as regards any good or bad effects produced; and (3) may produce severe reactions. If the lipoid is imperfectly removed, the vaccine may produce a reaction, and owing to the larger doses given the reaction may be severe. Such a faulty vaccine also frequently leaves small hard nodules at the site of injection, the organisms not being absorbed readily, with consequent diminution in the evidence of beneficial effects. If the protein matrix does not contain sufficient lime the therapeutic response is slight or nil. The results appear to depend upon the efficiency of the technique under the two headings of (*a*) lipoid removal, (*b*) lime saturation.

The term "agglutinated vaccines" is used because (1) they may not be detoxicated, and in the present state of our knowledge of bacterial toxins this is a term which conveys very little to me; (2) I am not prepared to put forward evidence that they are identical with sensitised vaccines, though clinically their effect is indistinguishable; (3) they are, however, agglutinated as regards the physical grouping or clumping of the bacteria.

Dosage.

The general scheme of dosage is that applied in the administration of sensitised vaccines. Three doses of say 500, 1000, and 1500 million may be given on three consecutive days with subsequent 1000 or 1500 million doses at three to seven days' interval. In my experience there is no object in exceeding a dose of about 2000 million, as if this dose does not produce a very definite response, it means that either the vaccine preparation technique has been faulty or the clinical diagnosis is wrong as regards the response of the disease to vaccine-therapy alone. This conclusion, of course, assumes that the vaccine contains the causal organism of the disease. The further manipulation of the emulsions of coccoid bodies obtained from blood is carried out on the principles just described. I do not put forward any claim that these structures are microbic, but shall use the term agglutinated "hæmo-vaccine" merely as a convenient term to indicate that therapeutically they exert some anti-bacterial effect. I shall confine the description of the manipulation of coccoid bodies from the ammonium carbonate distilled water, as the procedure in the citrated media is more complicated and less easy to bring to a satisfctory end-point.

One drop of blood is allowed to fall into about 6 c.cm. of ammonium carbonate distilled water. A zone of hæmolysis will be seen extending about half way up the tube from the bulk of the drop of blood at the bottom of the tube. With a sterile pipette the upper 5½ c.cm. of the tube contents are removed to a large sterile tube. The emulsion thus obtained has a faint pink colour, and a portion of the drop of blood is left at the bottom of the original tube. I cannot enter into the reasons for this procedure here, but I have cause to believe that the upper portion of the hæmolysed zone is more effective than the whole blood The diluted blood thus obtained is placed in a water-bath at 58°–60° C. and left there till turbid, and films show coccoid bodies, as in Fig. 1. About 1 c.cm. of 0·02 per cent neutral citrated broth is then added and the tube replaced in the bath for two to three minutes. About 10 c.cm. of neutral broth are then added, and the emulsion again heated for a few minutes. To a series of large tubes of sterile normal saline 3–5 c.cm. of the coccoid emulsion are then added and the process continued, as in the description of the preparation of agglutinated vaccines. The lime-content of the saline should be such that a considerable amorphous deposit is precipitated when 3–4 drops of 2 per cent. NaOH are added to about 15 c.cm. and the tube heated for 10 minutes at 60° C. If there is too much lime present the addition of a trace of caustic soda produces immediate turbidity and precipitation before the lipoid has been removed.

If there is too little lime the end-product is more or less inert. The dosage of the "hæmo-vaccine" of coccoid bodies is estimated by comparison with naked-eye turbidity of agglutinated vaccines, and diluted to a turbidity roughly corresponding to 1000 million organisms per c.cm. The administration is carried out on the principles adopted with sensitised vaccines.

Before proceeding to a description of the therapeutic effects, I would warn bacteriologists not to use these coccoid emulsions lightly. The technique is not easy to describe concisely; but very severe reactions may follow the use of imperfectly manipulated emulsions. The most dangerous elements are whole, or imperfectly disintegrated red cells, and emulsions containing these acquire an increased toxicity after standing in the cold for a few days. I have always investigated any new departure by animal experiment, and faulty emulsions, as described, have proved fatal to rabbits.

Investigations of the Coccoid Structures Described.

These fall under the two headings of scientific and clinical. Time, assistance, and equipment for scientific investigation have been meagre and limited. As a result I am unable to approach this aspect of the phenomenon as my findings are distinctly disjointed and incomplete. From the clinical side, however, I have had a unique opportunity of observing the effects of therapeutic administration. As physician in charge of a special department of clinical bacteriology in a large hospital, I am responsible for: (1) Supervision of isolation of the causal organism, (2) supervision of preparation of the vaccine, (3) supervision of administration of the vaccine, (4) determination of what additional forms of treatment are indicated, and (5) diagnosis of the condition for which the vaccine is administered.

Under these conditions many of the shortcomings of bacteriology in its clinical applications are avoided. In common with other forms of treatment, the entire structure of vaccine-therapy is built on a clinical basis. In the great majority of cases where a vaccine is administered and the patient improves, one wonders whether the improvement has occurred because of the vaccine or in spite of it, and the results are useless as regards the forming of any opinion as to the efficacy of the remedy. In a minority of cases, however, certain conclusions can reasonably be deduced, and where the total number is large, the minority represents hundreds of instances giving some information. The following four groups of conditions allow of certain deductions being made: (A) Acute fevers which run a moderately constant course, pneumonia being outstandingly the most constant of these; (B) diseases secondary to an unlocated infective focus; (C) toxæmias secondary to a known unremovable focus of infection; and (D) toxæmias secondary to obscure, unlocated, surgical foci.

Group A.—In pneumonia there is an inflammatory focus in the lung from which bacterial toxins are passed into the general circulation, and the vaccine should provide antibodies to neutralise the toxin. In the case of a sensitised vaccine clinical evidence of this neutralisation should occur in six to eight hours after the administration of the vaccine. The evidence takes the form of improvement in the patient's general condition with a fall of temperature, pulse, and to some extent respiration rate. The clinical evidence also points strongly to the neutralisation being a quantitative one, analogous to the neutralisation of diphtheria toxin by antitoxin. In this disease we recognise that a severe case will probably require a larger dose of antitoxin than a milder one, and the antitoxin is repeated until the toxæmia is controlled. In an ordinary case of pneumonia treated with average doses of sensitised vaccine the response is as in Chart 1. where a drop of about two degrees of temperature occurs six to eight hours after the administration of the vaccine. After keeping down for about 12 hours the temperature tends to rise again until a second dose of vaccine produces another fall.

Where the vaccine and toxin correspond in this way the fall of temperature and pulse in steps is very striking. If, on the other hand, the pneumonia is extensive, and the dose of vaccine not increased no very definite changes on the chart are noticed beyond perhaps a few transitory falls six to ten hours after the vaccine. The clinical point noticed, however, is that under the circumstances the patient's general condition seems to be very satisfactory. If the pneumonia is not extensive and one large dose of vaccine is given, the latter will often apparently completely and finally dispose of the toxæmia. When this is brought about on, say, the second day of the disease, it is very remarkable to see the patient apparently quite well and sitting up in bed with a normal temperature and pulse, but with a portion of the lung solid and all the physical signs of pneumonia present.

What deductions can be made from these results? We know that occasionally pneumonia aborts in the initial stage, but it is very rare to get two or three consecutive cases doing so. If the results described occur in six consecutive cases, it is sufficient evidence to warrant further investigation into the nature of the remedy apparently responsible. As my experience in the treatment of pneumonia extends from tens to hundreds, I find it still more difficult to come to any other conclusion than that these "auto-hæmo-vaccines," showing coccoid-like structures, exert some definite anti-bacterial effect. There is, however, another way of obtaining information, and this test I consistently apply where the patient is in hospital under my own observation. The temperature has been lowered on, say, the fourth day of the disease by one or two doses of vaccine to 100, and the patient's general condition is good. The vaccine is then stopped and the course watched. One of two things happens: either the temperature runs on in a modified form for four or five days, and then suddenly drops about the ninth day, or the temperature and pulse slowly creep up again, but are at once controlled by another dose of vaccine. It is very difficult to explain these attenuated courses by any factor outside the "vaccine."

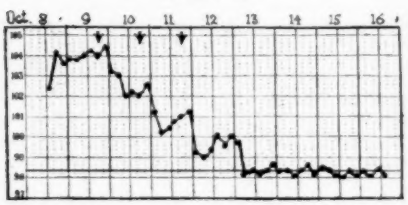
I do not claim for a moment that every case of pneumonia I have treated has responded as above described, but such a large percentage have done so that the principle appears to be sound. Where the response is not satisfactory also a reason can generally be found, and the chief causes of non-response are: (1) Faulty technique in preparation of the vaccine: As previously mentioned, I am quite sure that vaccines can be more or less inert though detoxicated if this term is to signify that they do not produce a reaction. A second vaccine made from the same emulsion, but with a different lime-saturating technique, may be just as effective as the first was inert. (2) Insufficient dosage: Three or four doses of, say, 500 million may have had no appreciable effect when a dose of 1500 million may at once control the disease. In these cases, however, it is difficult to estimate what the cumulative effect of the previous doses has been. (3) Faulty diagnosis: The entire mechanism of the above treatment of pneumonia rests upon a clinical basis, and the smallest empyema or metastatic abscess will completely negative results. The vaccine, however, is useful in diagnosis, and the exploration of an indefinite dull area because the patient failed to respond has yielded pus on several occasions, although the physical signs alone scarcely indicated pleural puncture.

When the pneumonia is associated with pleurisy, the response on the chart is usually less definite, and often occurs suddenly in three or four days. Finally, where the patient is moribund, and the myocardium and vaso-motor mechanism have already received a lethal dose of toxin, no neutralisation of the further supply will avert a fatal issue.

Group B.—In the second group of case I will give a typical example. A patient starts a course of "vaccine" for definite rheumatoid arthritis of two years' duration. The teeth appear sound, the arthritis has completely subsided in three months, and the "vaccine" is stopped. In six weeks there are

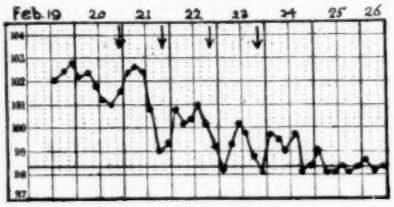
definite signs of relapse, the dental surgeon passes the teeth, and the arthritis again responds to the "vaccine," but again relapses in a few weeks. An X ray photograph then demonstrates the presence of an apical abscess. With the extraction of the tooth and a few doses of "vaccine" the arthritis disappears, and the patient is free from the disease two years later.

CHART 1.



Lobar pneumonia, October, 1916. Sensitised pneumococcal vaccine started on second day of disease. (Doses indicated by arrows.)

CHART 2.



Lobar pneumonia, February, 1923. Agglutinated "hæmo-vaccine" started on fourth day of disease.

Whatever the structures in the "hæmo-vaccine" may be, they would appear to exert a neutralising effect upon the toxins absorbed from the apical abscess.

Group C.—Chart 3 is that of a patient with severe phlegmasia alba dolens. The irregular septic temperature had been present for some weeks before starting the "hæmo-vaccine," which appears to definitely neutralise the absorption from the thrombosed vein for about 36 hours after each dose.

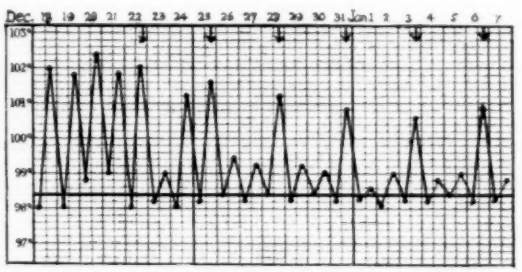
Group D.—In my experience of the use of "hæmo-vaccines" the most striking evidence of their antibacterial action has been in the lighting up of latent or obscure surgical foci. The action of a vaccine on an infective focus may take the form of a focal reaction or of a focal response. A focal reaction occurs where the vaccine used is one that produces a reaction and the disturbance is due to a temporary aggravation of the infective process. A focal response may follow the use of a sensitised vaccine, and is due to increased tension in a closed focus caused by antibacterial bodies entering the focus. If, for example, the corresponding sensitised vaccine is administered for a blind boil, one of two things will happen—either the boil will be absorbed and disappear, or it will rapidly come to a head and burst, and it is when the latter occurs in a closed space that signs and symptoms of response are evident. If the closed focus is situated in bone, or in a closed viscus such as the gall-bladder with obstruction in the duct, the addition of the serous exudate containing the antibodies results in increased tension, with consequent pain and evidence of increased toxæmia.

steps following the first three doses of vaccine, and the patient made an uninterrupted recovery. The intermediate condition between these two cases is where there is a focus present, but it is not under conditions where a slight increase in bulk will raise the tension. Examples are collections of pus such as an empyema and thrombosed veins in continuity with the blood-stream. In toxæmias secondary to this type of focus the vaccine has only a transitory beneficial effect or none at all. Although it exerts no localising effect, it indicates the presence of a focus which must be sought for on general clinical grounds.

The following two cases are examples of the localising effect:—

A boy had signs and symptoms of periostitis of the tibia, the periosteum was incised, and a small collection of pus exposed with apparently healthy subjacent bone. The temperature and pulse, however, remained up, and as there was a slight pleurisy present the origin of the toxæmia was obscure. In six to eight hours after the administration of a dose of "hæmo-vaccine" the boy developed excruciating pain in the tibia with a rise of temperature a few hours later.

CHART 3.

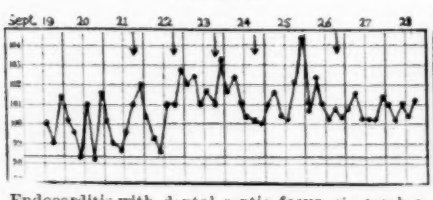


Puerperal white leg, December, 1919. "Auto-hæmo-vaccine" administered

The bone was then opened and found to be infiltrated with pus.

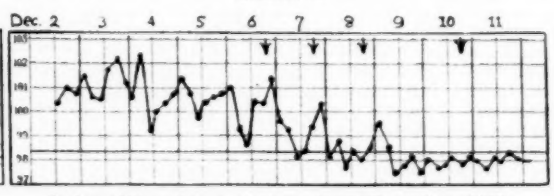
A woman, aged 29, for three weeks had been running an indefinite temperature with no localising signs or symptoms beyond a suspicion of jaundice at one time. A "vaccine" was administered with the object of possibly clearing up the infection, or more probably of localising the focus. On the fourth day, after three doses, the patient had a rigor accompanied by severe pain and tenderness in the region of the gall-bladder. An immediate operation was performed, and the gall-bladder was found to be distended with seropurulent fluid.

CHART 4.



Endocarditis with dental septic focus, September, 1922. "Auto-hæmo-vaccine" administered.

CHART 5.



Endocarditis without obvious focus, December, 1922. "Auto-hæmo-vaccine" administered.

The two Charts 4 and 5 are those of two cases of endocarditis. In Chart 4 there was an obviously septic tooth present. After the administration of the vaccine there was severe pain in the tooth, the swelling of the gum increased, the temperature rose and became continuous instead of intermittent, and the patient, who refused to have the tooth extracted, died. In Chart 5, clinically an identical case but with no obvious focus of infection, the temperature descended in three

I could enumerate 30 or 40 examples of obscure surgical foci localised in this way. Whatever these "hæmo-vaccines" may contain from a scientific point of view, they are extremely useful in practical clinical

diagnosis, and can be prepared in less than two hours, if necessary in a portable apparatus at the patient's house. I have endeavoured to keep a very open mind on the clinical results, but in the four groups of cases described it is difficult to come to any conclusion other than that the agglutinated emulsions of these small coccoid-like structures exert an antibacterial effect.

Having described the methods of producing the coccoid bodies, their further manipulations, and the results of their administration in the form of agglutinated emulsions, one naturally asks the questions: (1) Where do they come from? (2) What are they? (3) How do they exert their bactericidal powers? These questions open up very difficult scientific problems, to which I am not prepared to reply. From the indefinite and incomplete investigations that I have made in that direction, I have come to the conclusion that in a small laboratory, staffed and equipped for routine work, it would take a life-time to answer the above questions with the requisite scientific evidence. They appear to originate from the red blood cells. So far as their morphological appearance goes, they might be fragments of red cell stroma, colloidal particles of protein, some kind of micro-organism, or some particles which at present are not recognised as definite entities. Their exact mode of action is equally obscure. They may act in a manner analogous to peptone or shock protein-therapy. On the other hand, they act without producing any shock or reaction, and the fact that these coccoid bodies can be produced in vitro in peptone or other proteins would rather suggest that therapeutic proteins act by producing some form of coccoid body in vivo. I have a certain amount of evidence that the structures exert their bactericidal power by acting as calcium vehicles; but beyond that I am not prepared to put forward suggestions.

Although I can claim so little from the scientific side, I have not the slightest doubt as to the clinical evidences of antibacterial action. The conditions described are those in which the evidence of this action is peculiarly striking. The entire clinical evidence, however, is based upon four years' experience with about 2000 cases. All varieties of bacterial infections have been dealt with, ranging from tuberculosis in the human being to distemper in the dog. I hope to describe in detail this form of treatment of many diseases in the near future.

In conclusion, when he masters the slight though numerous technical difficulties of the procedure described, I am sure that the clinical bacteriologist will find at his disposal a rapid and most effective antibacterial remedy. Also I hope that the research laboratories will find data to investigate in the scientific problems that are involved.

ANTHELMINTIC WORK IN EGYPT.

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IN a previous communication[1] I described the establishment of a special department, termed an anthelmintic annexe, at Kasr-el-Aini Hospital, Cairo, for the out-patient treatment of the worm infections that are so rife in Egypt. The success of this undertaking has led to a large development of the system, so that at present there are five other annexes at work in the larger towns, one of which is supported by local funds. The object of the present article is to describe in brief outline the clinical work done and the results of further experience; an official report with statistics is in course of preparation by the Public Health Department.

Where space permits the annexe is erected in the grounds of a general hospital, but always has a separate establishment under the charge of one or generally two special medical officers. Each annexe consists of marquee tents or light shelters, arranged as waiting rooms, latrines, treatment room, clinical laboratory and shelters in which patients rest after treatment; accommodation for women and children is kept distinct. The shelters occupy the greater part of the annexe and are furnished with stretchers on trestles.

The patients are either sent from the neighbouring hospital or come of their own accord. The popularity of treatment is shown by the large and increasing attendance; over 50,000 new patients came last year, the largest annexe taking more than 10,000. Of these some 10 to 15 per cent. are females, and about 15 per cent. are children under 12 of both sexes. Males largely predominate, since they are more exposed to repeated infection. On admittance the general condition of the patient is noted and specimens of the dejecta secured for microscopical examination. When definite anæmia is present (easily determined by the use of Tallquist's card hæmoglobinometer), the patient is at once given a dose of vermicide, provided the alimentary conditions are favourable for its action. Otherwise he is directed to return for treatment, the next day if possible. At the second visit the results of the microscopical examination is known and appropriate treatment instituted. Negative cases and patients unsuitable for out-patient treatment are thus eliminated. Of the positive cases the great majority are infected with bilharziasis or ankylostomiasis.

Bilharzial Cases.

Treatment.—The routine treatment is a course of intravenous injections of antimony sodium tartrate, given three times a week till 12 doses have been given; this occupies four weeks. For an adult man the maximum dose is usually 2 gr., which is attained at the third injection; the initial dose is 1 gr. and the ordinary full course totals 22½ gr. of the drug. For women and adolescents smaller doses are often advisable, usually 1½ gr.; for children under 10 years 1 gr. is generally a sufficient dose. After each injection the patient lies down for an hour or two in the shelters, and is warned to avoid exertion for the rest of the day.

Control.—The effect of the treatment is tested by a routine microscopical examination of the excreta on the day when the eleventh injection is given, some 24 days after the commencement of treatment. Sometimes no ova are to be found, generally a few, occasionally some hundreds. These ova should all be unmistakably dead, showing up black or brown under the microscope, and in such cases the next injection (the twelfth) will complete the course. Only a small proportion of patients, 2 to 4 per cent., show a few ova yet alive and require more than 12 injections to ensure a cure. I have only met with one case in which the ordinary course had little apparent effect on the ova; a shorter course is often sufficient to cure slight cases, especially of old standing. In the case of patients, such as children, who are given reduced doses, it is advisable to test the efficacy of the dose employed earlier. After a fortnight's course, from 25 to 50 per cent. of the ova should fail to hatch in water.

Results.—While all observers agree on the beneficial results of antimony treatment, some report failure in a considerable proportion of cases. But before discussing the causes of failure it is necessary to distinguish between the clinical and the vermicidal results. Thus in many instances a few injections will remove the symptoms, while a prolonged course, amply sufficient to kill the ova and parent worms, will not cure a patient whose symptoms are due to secondary infection or papillomatous growths. The only criterion of specific cure of bilharziasis is the permanent disappearance of living ova; for months afterwards some dead ova may be found. The mere cessation of hæmorrhage is worthless as a test; in untreated cases there is often no blood lost, and a clear-looking sample of urine will often be found to contain far more ova than a specimen showing profuse hæmaturia.

Causes of Failure.—Judged on the vermicidal result, the usual cause of failure is insufficient treatment. This is commonly due to the early relief of symptoms, so that the patient, deeming himself the best observer, ceases attendance after a week or two.

On re-examination some months later, little or no effect of the treatment may be found. In the annexes it is to be expected that a considerable proportion, often more than half, of the patients fail to take a full course. Much depends on the punctuality and personality of the medical officers, and it is a compliment to Dr. Yassa Mitgalli, who has charge of the Kasr-el-Aini annexe, that over 63 per cent. of his bilharzial patients took the full course. Irregular attendance of patients is often responsible for unsatisfactory results. Should a patient absent himself for a week or two after a short course of four to six injections examination of the urine on his return will generally show absence of living ova. But this short course is rarely lethal to the parent worms, as we have been able to prove by post-mortem examination, so that a cure can only be assured by further treatment.

The following case is an example of failure due to infrequent attendance:—

Time in weeks	1	2	3	4	5	6	7	8	9	10
No. of injections per week ..	3	1	1	2	0	3	1	1	0	3

Here 15 injections, totalling 28½ gr. of antimony tartrate, were given in the course of ten weeks. At the finish three dead ova were found in the sample specimen; five weeks later three living and 25 dead ova. Five months from the end of treatment 200 living ova were counted in the specimen passed. Experience proves that it is necessary to maintain a sufficient concentration of the drug in the circulation for three to four weeks to secure death of the worms. When reduced doses are given it is advisable to test their effect on the ova during treatment, as mentioned above. Should a patient exhibit some intolerance to antimony, the dose can safely be reduced with little risk of jeopardising the cure. In such cases it appears that the system is saturated, and the worms suffer more than their host.

Clinical Results.—The clinical results of specific treatment are excellent in the early stages, but cases complicated by severe sepsis or marked structural changes are little benefited. A few very early cases with initial fever, œdema of the legs, swelling of the liver and spleen with high eosinophilia have come into hospital, and it has been possible to watch the rapid regression of these signs on treatment with antimony.

Bladder.—These cases form the great majority and do very well unless much pyuria from bacterial infection be present.

Ureter.—On account of the small calibre of the ureters, bilharzial disease readily produces partial obstruction and the late effects are disastrous.[2] Any case of renal colic showing even the slightest signs of bilharziasis should receive specific treatment, as only the earliest stage is curable.

Intestine.—Cases suitable for out-patient treatment do well. Those complicated by pellagra, septic dysentery, extensive papillomatous growths, or infiltrations are admitted to the wards, but are often refractory to all forms of treatment.

Liver.—Bilharzial cirrhosis is by no means an uncommon complication of *B. Mansoni* infection. In its later stages little benefit accrues from specific treatment: when the general infection has been treated, splenectomy is advisable if the enlarged spleen causes much local discomfort.

Precautions.—To avoid undue risks, proper selection of cases is indispensable. The more obviously unfit are automatically excluded, since they are unable to make the journeys to and from the annexe. Routine examination of the urine detects cases of renal disease, usually pyonephrosis from ureteral obstruction. Anæmic patients are first examined and treated for ankylostomiasis before treatment for bilharzial disease is instituted. Some deaths of apparently healthy persons under treatment with antimony have occurred. Reports indicate that intercurrent disease, especially attacks of fever, is an important source of danger. Unexpected bouts of pyrexia are not uncommon among our patients of the lower classes, but are rarely the subject of complaint. Thus an out-patient may come for his injection when suffering from influenza or other malady, conditions which render the use of antimony most undesirable. In other cases signs of cardiac irritation or depression may appear as toxic symptoms. Unless fresh solutions are employed, bacterial contamination may cause a considerable rise of temperature after injection. The precautions are: to use only fresh solutions, to feel the pulse, and to inquire after the general condition of every patient before each injection, taking the temperature should suspicion arise. After the injections have been given, the medical officer makes a round of the shelters and examines any patient who shows bad after-effects. A note is made on his card for subsequent warning. A certain number of patients develop jaundice; this is infrequent—less than 1 in 1000. The jaundice may appear during the course, but more often a week or so later. It closely resembles the salvarsan variety and has been of a mild nature.

Treatment with Emetine.—It appears that previous to Christopherson's publication on the use of antimony[3] the beneficial action of emetine on bilharziasis was known in Cairo, and the drug used as a secret remedy. The high cost of emetine has militated against its routine employment for the thousands of cases treated annually in the annexes, but for certain patients it is invaluable, and the drug is preferred to antimony by some practitioners. We use emetine for the following classes of patients: (1) young children and others whose veins are too small or inconspicuous for intravenous medication; (2) cases of intestinal bilharziasis complicated by amœbiasis; (3) patients exhibiting intolerance to antimony; (4) in the wards for cases complicated by advanced hepatic or renal disease. In general the course and doses employed have been similar to those of antimony tartrate. Slightly larger doses may be used, but are usually provocative of toxic effects, the patients complaining of heaviness and numbness of their limbs, symptoms which are not infrequent with the smaller doses towards the end of the course. An intensive course of daily injections in ten doses of 1½ to 2 gr. has been used by Erian[4] and Tsykalas[5] with success. On trial of this method Dr. Mitgalli found that severe toxic symptoms occurred in most patients, the neuritis being followed by ulcerations of the lips and tongue in several cases. At the end of this intensive course living ova were still found in the urine, but disappeared later. Patients seen after an interval of five months have shown a complete cure, proving that emetine has a cumulative effect and kills the worms as soon as the ova. With antimony, on the other hand, a short course will kill the ova in a similar way, but not all the worms. In the important work of Fargher and Gray[6] on the chemotherapy of antimony, it is shown that potassium antimony tartrate is two and a half times as toxic and the sodium compound one and three-quarters times as toxic as the lithium compound, whereas the antimony content is much the same in each. The drugs were tested by intravenous injection on mice. I have recently tried the effect of the lithium antimony tartrate, kindly prepared by W. M. Colles, Professor of Physical Chemistry at the Medical School. This compound proved to be fully effective in the treatment of bilharziasis, but it is too early to say that it is less toxic to man than the salts usually employed.

Ankylostoma Cases.

About 40 per cent. of the patients belong to this category, the proportion varying at the different establishments. Patients suffering from anæmia, both new and old, are seen first, as each treatment takes a few hours. The doctor counts the pulse, takes a drop of blood on absorbent paper, and enters its hæmoglobin value (according to Tallquist's scale) on the treatment card. Should the anæmia be severe or the general condition unsatisfactory, the patient is urged to enter the general hospital. In ordinary cases the medical officer directs that an anthelmintic be given at once, unless a meal has been recently taken, without waiting for a report on the dejecta. This is done to save time, for it is found that ankylostoma

patients as a class are irregular and slack in attendance. As the great majority of the patients have intestinal parasites of one sort or another a single treatment is of value.

Laboratory Diagnosis.—Though severe anæmia is almost invariably due to ankylostomiasis in Egypt, the identification of the infection by microscopical examination of the stools is always desirable and is necessary for the control of treatment. In the majority of cases the test is needed to confirm the clinical diagnosis, while in an important minority it shows some other infection—such as chronic dysentery—to be responsible for the patient's symptoms. For unless diarrhœa be excessive or hæmorrhage occur, the average patient pays scant attention to his stools. The specimens of fæces collected are divided for examination in two classes: (*a*) liquid stools and those containing blood, (*b*) those of normal appearance.

(*a*) Abnormal stools should be the first examined at the laboratory. The presence of blood and mucus more or less separate from the main dejecta is characteristic of bilharzial disease of the intestine, and the spined ova will be found in this exudate. Other stools may contain much pus, often many flagellates, and the origin of the dysentery be thus obscured by secondary infections. Suspicious stools must be searched for amœbæ; hence the advisability of examining such specimens as soon as possible, before the amœbæ become inactive. Cysts are much more troublesome to identify, and, in the case of *Entamœba histolytica*, need the addition of iodine solution to bring out their structure.

(*b*) In the ordinary stool the search for ova is simplified by the routine employment of the flotation method, the mechanical process being performed by an orderly. Although the very simple method used[1] is by no means perfect[7] it represents a great advance on a direct smear. All laboratory findings are entered in the space provided on the treatment card and the numbers of ova present roughly indicated by the addition of + signs.

Treatment.—Carbon tetrachloride is the best remedy and is given in doses of 3 to 5 c.cm., followed by a purge after two hours. As a rule two treatments will remove almost all the worms. When this drug is not available, oil of chenopodium is substituted; it is given in gelatin capsules, each containing 0·5 c.cm. To an adult two capsules are given at once; the patient lies down and after one and a half hours another capsule is administered, followed by a dose of castor oil after another hour. When the treatment is finished the patient is allowed to take food and go home. He is instructed to return a week later, fasting, and to bring a bottle for medicine with him. For the convenience of patients who live some distance away, sleeping accommodation is provided, so that they may come the evening before. In cases proved positive on stool examination, the anthelmintic is repeated on two subsequent visits, the patient taking iron and arsenic mixture or pills in the intervals. At the third administration the hæmoglobin value of the blood is again determined and the stools re-examined for ova. So long as ova are found, weekly treatments are continued. As a rule two treatments with carbon tetrachloride or three with oil of chenopodium are sufficient to expel all but a negligible number of the ankylostomes. Hæmatinic treatment is generally essential for a satisfactory recovery from the anæmia. The conclusions given in a previous study[8] have been fully confirmed on further experience. Thus the steady rise of Hb value following the expulsion of worms is an excellent index of successful treatment. The patient should be urged to continue taking the iron mixture and warned that recovery of his strength will be gradual. In many cases a weekly injection of sodium cacodylate will further improve the anæmia and encourage attendance, as most patients have a firm belief in the efficacy of the "needle." A failure of the case to respond to efficient treatment is a sign of an incomplete diagnosis, and some complicating disease should be searched for. When ascaris or tænia ova are found on examination of the stool, it is customary to supplement the treatment described by giving the appropriate remedies. Patients found suffering from chronic amœbic or bilharzial dysentery receive treatment at the annexe; negative cases are referred to the general hospital.

In concluding this brief survey I wish to express my obligations to the staff of the Public Health Department, whose work has been crowned by so large a measure of success.

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Clinical and Laboratory Notes.

A CASE OF *B. PYOCYANEUS* INFECTION CURED BY VACCINE TREATMENT.

BY H. RONALD CARTER, M.D. BRUX., M.R.C.S. ENG.,
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THIS case of *B. pyocyaneus* infection, which had some clinical resemblance to glanders, is of interest in that *B. pyocyaneus* usually infects the alimentary tract.

A married woman, aged 63, had been a cripple from rheumatoid arthritis for 20 years. The pyocyaneus infection had no connexion with her arthritis. On Oct. 5th, 1920, whilst being pushed along in her wheeled chair she suddenly felt that she had a "cold in the head." When she got home her nose was "very stuffy," and the next day she had developed a "feverish cold," which persisted and got worse.

Condition on Examination.—I saw her on the 15th, when there was a clear mucous discharge from the nose, sometimes blood-stained. Temperature 102° F. I could find nothing else to account for the temperature. The nose was douched with a saline lotion, and this often brought away large blood-clots from the posterior nares. There was considerable pain and swelling in the nose accompanied by frontal headache.

On the 28th a tense, brawny swelling occurred over the right parotid, with intense pain. I made a free incision and clear fluid escaped, which in a day or two became greenish in appearance. As the patient was in great pain I gave her a hypodermic injection of morphia in her left forearm; the next day the same brawny swelling appeared over the whole of the extensor aspect of the left forearm.

Operation.—I asked Mr. Zachary Cope to see the case, and he cut into the swelling and found no pus, but a complete necrosis of the subcutaneous tissue, which he proceeded to remove. About a week after this operation a greenish discharge made its appearance. The wound healed up in two months, when suddenly she developed acute pain and discharge from both ears.

Vaccine Treatment.—The patient was becoming rapidly worse, so I asked Dr. John Freeman to see her; he admitted that the case bore some clinical resemblance to glanders, but fortunately he was able to isolate the *B. pyocyaneus*, and glanders was not present. An autogenous vaccine was made, and I began giving a dose of 2 millions, but this proved to be far too strong. The vaccine had to be considerably diluted, and I found I got the best results with a dose of about 15,000. This small dose had to be cautiously increased, as any overdose made the patient very ill for a week. I continued to give the vaccine for two and a half years; latterly I was giving 100 million doses without producing any reaction. These large doses were well tolerated if given not oftener than once a month. The patient is now perfectly well; her arthritis, of course, remains the same.

I feel a case like this is convincing as to the adequacy of vaccine treatment. The question of dosage, however, is of practical importance, because on several occasions I had the greatest difficulty in persuading the patient and the rest of the family to continue the treatment after a very violent reaction had occurred. The laboratory expert cannot unfortunately tell us what the minimum dose in a particular case should be; the clinician must find this out for himself.

Kensington, W.

A CASE OF FOOT-AND-MOUTH DISEASE.

BY A. HUGH GIBBON, M.D. BRUX.,
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I WILL preface this note of a case of foot-and-mouth disease with the definition given by Prof. J. McFadyean, in Clifford Allbutt's "System of Medicine." "Foot-and-mouth disease is an acute febrile condition characterised by the formation of a vesicular eruption, the most constant seats of which are the buccal mucous membrane and the skin of the digits."

The patient, aged 35, was a tailor by trade. The attack occurred some years ago during a severe outbreak of foot-and-mouth disease in Norfolk. The patient had many farmers as clients and possibly became infected on his wrist while handling some client's clothes with saliva on them. The condition first appeared as a herpetiform eruption on lips, which gradually spread to buccal and lingual mucous membrane.

Foot-and-Mouth Disease.

FIG. 1.

FIG. 2.

Showing vesicles on hands and feet of patient. Fig. 2 is a clearer representation of the condition.

Within from 24 to 48 hours bright red spots appeared on hands, arms, feet, and legs (Figs. 1 and 2), principally on the extensor surfaces, as far as the elbows and knees—though there were a few scattered ones on the soles of the feet and on the thighs. These gradually enlarged, becoming vesicular. Simultaneously, large vesicles developed all over the inside of the mouth, cheeks, and lips, and must have spread over the pharynx, as there was considerable difficulty in swallowing. The tongue, the whole surface of which was covered, had eight or nine large separate vesicles on it, the margins of which must have met, so that after these had subsided definite scars were left where the edges had been.

Simultaneously, conjunctivitis appeared (with much photophobia) developing into an acute purulent ophthalmia. There was also a purulent, very offensive nasal discharge. There was an increased salivary secretion, or an appearance of the latter, which might have been due to the difficulty in swallowing. The temperature rose slowly and steadily to 103° F. with very slight morning remissions, and as gradually subsided.

The patient's chief complaint, apart from the discomfort of the eyes and mouth and tenderness of the extremities, was that "he could not smoke, as it made his eyes and tongue smart too much." He "did not feel ill in himself." The total duration of the attack was about three weeks. The fluid in the vesicles was gradually absorbed, only one on the right wrist showing any signs of suppuration, while those in the mouth burst, leaving a bright red, very tender base.

The patient made an uninterrupted recovery, the only complications being that as the nails grew up there was a deep sulcus, showing symmetrical destruction of the matrix at the base of the nails, both of hands and feet; also—two years after the attack, when patient was last seen—there persisted a very definite, fine, fibrillary tremor of the fingers, similar to that seen in Graves's disease.

A CASE OF CHORION-EPITHELIOMA.[1]

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THIS case of chorion-epithelioma is of interest as it presents several unusual features.

The patient, a woman aged 35, had been married three years, and had had no child. She had lived in India for three and a half years before returning to England in November, 1923. Following are the details of the case before her departure from India:—

History.—She had always had slight irregularity of her periods, which were occasionally very painful; about nine months before marriage she began to have periods every three weeks. The periods at the time of marriage remained unchanged until August, 1922, when they began to be rather more frequent. About Christmas of that year the patient began to have bleeding every ten days followed by a pinkish discharge, which went on until the next bleeding in ten days or so. In about the middle of April, 1923, one night the patient suddenly had a very severe pain in the lower abdomen; she nearly fainted, and had to take brandy and have hot-water bottles applied. Next day she had rather severe vaginal bleeding. About ten days later she had a bad hæmorrhage that lasted a few hours. She was away from home April 29th to May 3rd, and had attacks of pain in the lower abdomen of increasing intensity, with vaginal bleeding during that time. On her return on May 4th marked tenderness of lower abdomen was detected, and by vaginal examination ill-defined masses could be felt on both sides of the uterus, which were very tender. The uterus could not be outlined; there was no mass in the pouch of Douglas; the temperature was 100° F.

Diagnosis.—As the patient had had cystitis some months previously a diagnosis of salpingitis was made. She was treated by rest in bed and hot douches, ichthyol and glycerine plugs and application to the abdomen for a few days with some improvement, but on the 9th the patient looked ill and could not move on account of intense pain at the lower abdomen. At this time there seemed to be less swelling to the left, but on the right the tender mass reached up to the level of the umbilicus; there was a leucocytosis of 15,000.

Operation.—Colonel G. D. Franklin was called in, diagnosed appendix abscess, and operated on the 10th. When the peritoneal cavity was opened the swelling was found to be due to blood, not pus: the incision was elongated, and a large left tubal gestation, still bleeding, was brought up into the wound. The mass was ligatured off with part of the ovary, and clots removed from the peritoneal cavity; it appeared to consist of nothing but laminated clots with the appendages. The uterus was found slightly enlarged. The abdomen was closed in the usual way. The patient

[1] A case described at a meeting of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine, on Feb. 7th, 1924.

was relieved of all pain and made a rapid uneventful recovery.

Course of Case.—On June 7th, one month after operation, a vaginal examination was made; a fleshy mass in which a spicule of bone could be felt was found protruding through the os, which was about 1 inch dilated. The patient then said that for a few days she had felt pain in defæcation and had always to sit down very gently. The next day—under morphia—the mass was removed by ovum forceps and flushing curette; the uterus was gently curetted, and seemed to be empty and not more enlarged than in a two months' pregnancy. The fornices were clear. The mass removed was about 3 inches in length, and contained a few definite spicules of bone, but nothing could be recognised as any definite part of a fœtus. It was thought that the pregnancy must have been in the uterine end of the tube and expelled into the uterus where the fleshy mole had formed.

The patient was able to go to the Hills six days later, and there she picked up rapidly, put on flesh, and felt very well. Her periods occurred on June 27th, July 21st, and August 16th; they were increasingly painful, but there was no excessive loss. The August period started normally, but after the first day the discharge became watery and pink in colour, and persisted until Sept. 2nd, when she was examined again and a smooth round mass was found protruding from the external os. Four days later, under an anæsthetic, the mass was found to be the size of a goose's egg and attached to the anterior left wall of the uterus by a pedicle about 1 inch in diameter. The pedicle was divided, and a rough area left at its site of attachment, but otherwise the uterus was empty and the wall normal. Pure carbolic was applied; later the patient was given ergot and hot douches, and the uterus contracted down.

It was thought that this tumour was probably a chorion-epithelioma, and it was sent to Bombay for examination by a pathologist. He reported that the mass had a structure resembling placenta; no malignant change could be found, and there was nothing suggesting deciduoma malignum. The patient was up six days after this operation apparently well, but two days later, on Sept. 14th, she had severe pain in the left side of the abdomen low down; this persisted until the 20th, when she was again seen by Dr. Helen M. McMillan, who found tenderness in the pelvis; there were also diarrhœa and pelvic pain. During the next 24 hours there were four stools, which contained blood and mucus. Emetin and sodium sulphate were given, and all bowel symptoms quickly disappeared, but the uterus and surrounding parts were very tender.

On Oct. 9th, just before patient went to Bombay to sail for England, it was noted that her temperature varied between 99°–100°; she had some indigestion, and at times had pain on defæcation. The uterus was somewhat enlarged and still rather tender, a hard ridge was felt between the uterus and the stump of the left appendages; the stump itself was very distinctly felt. The right fornix and Douglas's pouch were clear. On the 13th profuse vaginal bleeding started, lasted for three days, and was followed by a pink discharge. During the voyage from India this discharge continued, the temperature ranged from 99°–100°, the pain in the lower abdomen was continuous and very severe, and there was added to it very acute pain low down in the back.

Condition on Arrival in England.—On arrival in London on Nov. 6th a hard, fixed nodular mass was felt in the abdomen, reaching up to the umbilicus and out on each side to the anterior superior spines. There was no dullness in the flanks and no evidence of any involvement of the lungs. There was very great frequency of micturition. On vaginal examination a large polypoid mass was found occupying the vagina. The lip of the cervix could be reached surrounding the pedicle except on the left side.

Final Operation.—On Nov. 8th I examined the patient under an anæsthetic, when the complete ring of cervix was felt, but the pedicle seemed to be attached very low down on the left side. I removed the polyp and gently curetted the cervix; it was then clear that the abdominal mass was fixed. A circular rough area about 1 inch in diameter was seen where the stalk of the polyp had been divided. This area reached to within about ½ inch of the external os on the left side, and the opening of the undilated part of the cervical canal could be seen to the right of it. Into this the sound could be passed 2 inches. In the recto-vaginal septum a circular thickening about 1 inch in diameter and ½ inch in thickness was felt separated from the cervix by about ½ inch of apparently healthy vaginal wall.

Fatal Termination.—After this operation the patient lived for three weeks; she got rapidly thinner, but the frequency of the micturition ceased, and there was no vaginal bleeding or discharge. Eleven days before death complete intestinal obstruction developed, which caused great distension of the upper part of the abdomen, but no increase of the tumour or change in the other signs in the abdomen could be detected. For the last five days there was suppression of the urine. The abdominal distension caused great embarrassment of respiration, but there was no other evidence of involvement of the lungs. The patient died on Nov. 28th of what the nurse described as suffocation.

The polypoid tumour removed from the vagina is roughly heart-shaped and measures 3 by 2¾ by 2 inches. It is a solid tumour with partly gangrenous exterior. The cut surface shows a narrow border of reddish tissue on the outside which surrounds a large firm pale area extending to the lowest limit of the mass. Two cysts are present in the mass, and a large hæmorrhage. There is some calcification in the pale area.

Dr. L. S. Dudgeon, who examined the tumour for me, found chorion-epithelioma in all the sections. He reported that there were wide tracts of necrosis and hæmorrhage; inflammatory reaction in the necrotic areas, especially at the limiting zones. One portion shows a firm fibrous tissue enclosing large cells, in some cases multi-nucleated, and a loose tissue with large multi-nucleated cells scattered all through. Two or three tracts of "epithelial" tissue are present in most of the sections.

The points of especial interest in the case seemed to me to be: (1) That the chorion-epithelioma followed an extra-uterine gestation, but appeared as an intra-uterine growth; (2) that three large polypi were removed per vaginam from the uterus between June and December, and in each case the area of attachment to the wall was of about the same extent; (3) that the periods returned, and were regular and not excessive between the removal of the first and second polypi; (4) that what appeared to be spicules of bone were found in the first, and calcified areas in the third polypus; (5) that there was no evidence of ascites, though the main mass of growth seemed to be intraperitoneal.

I am indebted to Dr. McMillan and Colonel Franklin for the details of the case before the patient's departure from India.

A CASE OF TRISMUS IN ENTERIC FEVER.

BY JAMES S. ANDERSON, M.D. ABERD., D.P.H.,
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IN view of the rarity of the condition, the following case has been thought worthy of record.

A male, aged 17, came of a family with a marked history of mental instability on the mother's side. He was admitted to hospital on the third day of his illness, having contracted the disease from his sister who had already sickened of it. The onset was acute, with marked prostration. For the next fortnight the temperature remained continuously between 101° and 105° F., the pulse-rate varying between 110 and 124. The blood gave a pure culture of *B. typhosus*, and an agglutination of the same organism to 1 in 30. On the seventh day of the disease low muttering delirium set in, while carphology and subsultus tendinum were invariably present. Hydrotherapy, with ice cold water, only partially controlled the fever, and sleep, usually of short duration, could only be obtained by intensive administration of chloral hydrate and ammonium bromide. For five days the delirium was very marked, and then gradually disappeared. On the twenty-third day delirium of suspicion was noted, but only for one day. Bowel hæmorrhage occurred between the fifteenth and twenty-first days, intermittent in character, and never amounting to more than a few clots. On the twenty-seventh day symptoms of periostitis developed in an unusual position—the right wing of the sacrum being involved. The temperature, which had almost reached normal, simultaneously began to rise. This region was explored on the thirty-third day, and from the pus a pure culture of *B. typhosus* was also obtained. Meanwhile, on the thirtieth day, trismus appeared. Tonic, apparently painless, contraction of the jaw muscles gradually increased in intensity, and was accompanied by difficulty in deglutition and tonic contraction of the extremities, and of the muscles of the back and the nape of the neck. The trismus was constant, and at most the teeth could only be separated to the extent of a quarter of an inch, but there were no convulsions typical of tetanus. In view of the possibility of meningitis, lumbar puncture was performed on the thirty-first day, when a slight increase of pressure of the cerebro-spinal fluid was noted. The cytology and chemistry of the fluid were normal, while the culture

remained sterile. Prior to the development of trismus no broken sores were visible on the body, and no history of recent injury was present. No urinary changes were detected. Tonic contracture remained a constant feature, trismus being so marked at times that the patient could not separate the teeth. Death occurred on the thirty-eighth day of the disease.

According to Curschmann,[1] the occurrence in adults of trismus and a tetanus-like condition in enteric fever is a rare event, and is an expression either of a most profound toxic action upon the central nervous system, or of especially severe complications.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

A MEETING of this Society was held on Feb. 25th at 11, Chandos-street, Cavendish-square, W., Dr HERBERT SPENCER in the chair, when a discussion was held on the

Treatment of Fibroids of the Uterus.

Dr. CUTHBERT LOCKYER, opening the discussion, said that it had been estimated that uterine fibroids could be demonstrated in from 10 to 25 per cent. of all women, and that Frank had stated that 45 per cent. of uterine fibroids required treatment. If the possessor of the tumour was conscious of its presence the growth should be kept under periodic observation. He would advise radiologists who favoured submitting a symptomless fibroid to X rays to let sleeping dogs lie.

Operative Measures.

Uterine fibroids requiring treatment might be dealt with by palliative or by curative measures: radiotherapy could be classed under either head according to taste. He would, however, discuss surgical methods before dealing with radiotherapy. The routes of surgical attack might be abdominal or vaginal. Vaginal procedures included the removal of pedunculated fibroids from the body of the uterus and the cervical canal, hysterotomy, and in a certain number of cases hysterectomy. Abdominal operations included myomectomy, supravaginal amputation, and total hysterectomy.

Myomectomy.—Strenuous efforts were being made to popularise this apparently safe and ideal operation. The clear indications for its use were to preserve for the non-gravid woman a functional uterus, and to cope with a surgical emergency in the gravid state. He believed that after deep myomectomy with the opening up of the uterine cavity which was frequently necessary, convalescence was by no means smooth, and morbidity was increased. W. Mayo's statistics on myomectomy gave valuable information concerning subsequent fertility. Of 741 myomectomies (617 abdominal, 124 vaginal), 59 afterwards became pregnant, 44 children were known to have been born, and 15 women were pregnant at the time of reporting. Nineteen of these myomectomies were performed during pregnancy, and 23 women previously sterile were known to have one child or more after operation. In his own cases (continued Dr. Lockyer) he had performed 545 major operations for fibroids; 33 of these, or 6 per cent., were abdominal myomectomies, and there was one death, due to the presence of umbilical hernia and massed adhesions of the small bowel. He submitted that myomectomy during pregnancy was well tolerated by the gravid uterus, that it was not indicated for fibroids lying well up in the abdomen and causing no symptoms, and that in the presence of severe bleeding it made uncertain the possibility of saving the gravid uterus. In wisely selected cases, however, it had proved satisfactory.

[1] Curschmann: Nothnagel's Encyclopædia of Practical Medicine English Ed., 1902, p. 264.

Supravaginal Amputation or "Subtotal Hysterectomy."—This operation had divided gynæcologists into two schools—those who advocated its abolition from classical technique, and those who wished to retain an operation which had done more than any other to give repute to surgical treatment of fibroids. He considered that some surgeons went too far in refusing to admit that the subtotal operation had still a place in surgery. The risk of leaving behind a malignant or potentially malignant vaginal cervix could with care be reduced to a minimum. In 479 abdominal hysterectomies for uterine fibroids he had performed the supravaginal operation 284 times with five deaths—a mortality of 1·76 per cent.

Total Hysterectomy.—This operation was older than the subtotal one; the relative risks of the two were hard to determine, for (1) many total hysterectomies were done because the operator had no choice, having to remove the uterus for a large fibroid—as he should do in all septic cases—and (2) the same operator might use the method in easy cases, or whenever the circumstances did not prevent him from so doing. He would thus have two totally different types of case in his statistics of the same operation. A personal series of total hysterectomies numbered 195 with three deaths (1·54 per cent.) and a personal series of subtotal operations numbered 284 with five deaths (1·76 per cent.). Miles Phillips's results and his own together seemed to show that the primary risks of the two operations lay within quite small limits, the difference being slightly in favour of the subtotal operation. Before investigating the point he had imagined a higher relative mortality for the total operation. This view he no longer held, but time had not yet permitted him to redress the balance in the numbers of operations in his own practice.

The Fate of the Ovaries.

Hysterectomy for fibroids being more commonly performed on women over the age of 40, it might be argued that the sacrifice of both ovaries was unimportant, but he believed that even above that age it was better to conserve one if they were healthy. Phillips had stated that he had once taken pains to conserve ovaries, but had found that cases from whom all ovarian tissue had been removed gave the most perfect results. Prof. Blair Bell had said that when conservation of the normal ovary was not feasible, owing to infection of the appendages or other reasons, he always made an ovarian graft in women under 40 years of age. This was (continued Dr. Lockyer) probably the practice of most of those present; he believed that the Manchester, Sheffield, and Birmingham schools stood alone in advocating routine castration during hysterectomy for fibroid.

Radiotherapy.

The value of radium and X rays in checking hæmorrhage was now universally admitted. Hæmorrhage was the most prominent symptom of uterine fibroids. But treatment by radio-active bodies was not without risks in this connexion; quantitative dosage had yet to be attained, and there seemed more hope for radium than for Rontgen rays in respect of scientific measurement of dosage. Surgeons who had studied pelvic pathology realised that the uses of radiotherapy for fibroids of the uterus were confined within extremely narrow limits, variously described as from 17 to 5 per cent. of all cases. His own experience with the use of radium in the treatment of hæmorrhage had been in cases of chronic metritis, and the results had been favourable. In conclusion, he would, if asked as to the proportions of cases of uterine fibroids requiring removal, reply that 55 per cent. of all fibroids needed no treatment at all, 35 per cent. required removal, and the remaining 10 per cent. should be dealt with by radium.

Discussion.

Sir GEORGE BLACKER thought that most of those present would agree with much that they had heard

from Dr. Lockyer; fibroids which gave no trouble required no surgery, but when surgery was necessary, he had removed tumours weighing 2 lb. without damage to the patient. It had been said that removal should be performed to promote pregnancy, but he believed that the majority of women having fibroids were already sterile, and he would rather attend a woman with half a dozen fibroids than one with half a dozen scars of previous myectomies. Personally, he found that the advantages of total and subtotal hysterectomy were evenly balanced, provided the operation was carried out by expert hands; but subtotal hysterectomy was more difficult, and if it were practised by all sorts of operators throughout the country the mortality would rise above that of women dying from cancer of the body of the uterus after the cervix had been removed. The ovaries should never be removed in young women; such castration was unnecessary, the whole object of hysterectomy being to leave healthy organs behind. He considered that radium treatment had many advantages in a very small class of case, namely—tumours of small size, without complication of any kind. He had abandoned X ray treatment some years before, and when using radium was always careful to give an anæsthetic, to perform careful bimanual examination, to explore the interior of the uterus, and to carry out curettage. Patients reacted quite differently to radium treatment as regards dosage and time required. After-treatment was simple; the radium treatment could be carried out in a week-end, and in the light of the problem of waste of public money, owing to protracted periods spent by patients in hospital, this rapid treatment should be useful. He had treated 37 patients with fibroid tumours during the past few years; of 23 of these, treated before June, 1922, 21 were completely cured. One of the others had a sarcoma of the uterus. Of the 14 treated since, 12 were apparently cured.

Mr. T. G. STEVENS asked what was the result of the treatment on the fibroids themselves. He had seen a case treated by X rays, in which the patient appeared at the end of four years with a large sarcoma of the cervix, and had read of other cases. Patients treated in the West End of London or in the consulting districts of large cities might be safe enough, but what would happen to the cases of fibroids treated all over the country by inexperienced men? He had found a patient who was being treated with radiation and had a large ovarian cyst; fortunately, the instrumentation had been weak.

Dr. H. WILLIAMSON believed that present knowledge was only of temporary value; they knew nothing of the causation of fibroids, and it was to be hoped that in the future some histologist or biochemist would make a discovery in this direction. They aimed at leaving the uterus to function if possible. Many women with fibroids bore children, and sometimes fibroids grew so slowly as never to require treatment. Drugs had at best a very limited value in this connexion. Myomectomy offered great advantages for the leaving of a functioning uterus. He would limit the use of X rays, which had no place in the treatment of young women, or of those with large tumours, pelvic inflammation, polypi, or pregnancy. With regard to total and subtotal hysterectomy, he believed that in the virgin the uterus should be left, and in the multipara removed.

Mr. BECKWITH WHITEHOUSE confined his remarks chiefly to the results of the surgical treatment of myomata. In 16 years 438 consecutive operations for fibroids had been performed at the General Hospital, Birmingham, by Dr. Thomas Wilson and himself; in this series there were 14 deaths, a gross mortality of 3·19 per cent. During the same period 97 private patients were operated upon, with a mortality of 2 per cent. The total series therefore consisted of 535 consecutive cases with 16 deaths, a mortality of 2·9 per cent. The operation of choice was panhysterectomy, but the latter was associated with a mortality of 4 per cent. The subtotal operation, performed in about half the number of cases, had about half the mortality; it was reserved generally for large solitary myomata in single patients or sterile married women. There was no instance of carcinoma occurring in the cervical stump after subtotal hysterectomy. Dr. Wilson and he had concluded from an investigation that with total hysterectomy the conservation of the ovaries was unimportant; with subtotal hysterectomy, conservation was important if endometrial tissue also was saved; and that it was advisable to conserve both ovarian and endometrial tissue in women approaching the menopause. He had never seen a myoma disappear with radiotherapy, but had seen suppuration and intestinal adhesions resulting from use of the method.

Dr. N. S. FINZI said that radiologists depended on their gynæcological colleagues for the selection of cases suitable for radiotherapy. On the continent the majority of cases were treated by radiation—X rays or radium or both. He treated patients for three successive days, then made an interval of four weeks, and then repeated the three days' treatment twice, with a similar interval between; he had found the three series of treatments sufficient for all cases. He sometimes employed a special technique by which he gave one large dose, which caused a certain amount of discomfort and illness in some cases. The result in the fibroid was the gradual disappearance of the latter.

Mr. J. P. HEDLEY preferred operation to radiation when the fibroid was large and near the umbilicus, and when the woman was approaching the menopause. He had found radiation very useful in small tumours; it cured bleeding, and so far as he knew did no harm.

Dr. H. A. DES VŒUX, speaking from the general practitioner's point of view, said that in pre-operation days he had come to the conclusion that fibroids were not a dangerous disease. Later, he had found that when he told patients that they had fibroids they immediately ran off to a gynæcologist. He wished the gynæcologists would spread abroad among general practitioners their knowledge concerning the harmlessness of fibroids giving rise to no symptoms. Was irritation of the bladder a symptom sufficient to necessitate removal of the uterus?

The PRESIDENT said that no honest man would operate where no symptoms arose, although a small fibroid was present; but all large fibroids were degenerated, and should be operated on. He agreed with those who had spoken of the value of vaginal myomectomy and hysterectomy; abdominal myomectomy was also very useful at times. He was particularly interested in the conflicting views of the relative value of total and subtotal hysterectomy. He was glad that he had almost persuaded Dr. Lockyer to become a total hysterectomist; Dr. Lockyer's own figures showed that total hysterectomy, done in more difficult cases, had a lower mortality than the subtotal operation. Dr. Miles Phillips had actually said that total hysterectomy was better than the other. Cancer of the cervix occurred in a large number of cases after subtotal hysterectomy. In upholding the total operation, he had the support of the leading gynæcologists of Russia, Austria, Germany, and America, and he hoped that those of this country would come to give him theirs also. It was not right to use X rays and radium extensively in the light of their effects on the blood and intestines, particularly with regard to the extensive ulceration which sometimes resulted from their employment.

Dr. LOCKYER made a brief reply.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

Bayer "205" and Trypanosomiasis.

A MEETING of this Society was held on Feb. 21st at 11, Chandos-street, W., Sir P. BASSETT-SMITH, the President, being in the chair.

Prof. F. K. KLEINE read a paper on his recent expedition to Africa to investigate the action of Bayer "205" on trypanosomiasis. An abstract of the paper was given in THE LANCET last week. Prof. Kleine's paper was preceded by a microscopic demonstration of various types of trypanosomes in human and animal blood, and was followed by an interesting discussion.

Prof. WARRINGTON YORKE said it was commonly believed that sleeping sickness was a very fatal and rapid disease, whereas such was not the case. It was a question whether trypanosomiasis underwent a spontaneous cure. Prof. Kleine surmised that it did, and from cases which had been studied the inference was that spontaneous cure did take place, or at all events cure resulted after one or two injections of drugs such as salvarsan or atoxyl. Some confusion, he continued, had arisen in the consideration of sleeping sickness in Africa. Of the two types caused respectively by *T. rhodesiense* and *T. gambiense*, the latter was further subdivided into (*a*) a severe type of disease, and (*b*) a mild epidemic form found in West Africa. Of 35 cases of the mild infection noted in 1913, 24 were still alive ten years later. It was the opinion of the natives that the disease had simply died out. He quoted Dr. Lyndhurst Duke's opinion that the transmission of the disease was mechanical, in reply to which Prof. Kleine said that if the mechanical theory were correct, then it was inconceivable that trypanosomiasis should not have spread far beyond the bounds of tropical Africa. Prof. Yorke was not favourably impressed with the methods of the Rhodesian Government in allowing a native commission to undertake the work of investigation, but Prof. Kleine expressed himself as satisfied with the competence of the workers.

Prof. Yorke then showed a case, Mr. J., who had been cured of trypanosomiasis by Bayer "205" three years ago, and, as the patient himself testified, was now in excellent health.

Dr. G. C. LOW said that a distinction must be drawn between the infection as it occurred in natives as distinct from white men. Spontaneous cure might take place in a native, but he had never known of a spontaneous cure in the case of a white man. Bayer "205" had certain disadvantages; it was a poisonous drug and attacked the kidney. Very careful nursing was required to reduce the albuminuria.

Sir FREDERICK MOTT compared the affection of the central nervous system in trypanosomiasis to that in general paralysis of the insane. As other trypanocidal drugs he instanced tryparsamide, made at the Rockefeller Institute, and bismoxyl. He inquired if there might not be two varieties of trypanosome, on the analogy of the neuropathic and the dermopathic spirochætes, which Prof. Kleine, in his reply, admitted as a possibility.

Other speakers put forward the claims of tryparsamide and atoxyl, but Prof. Kleine reiterated his statement that Bayer "205" would seem to be the best remedy for sleeping sickness.

MEDICO-LEGAL SOCIETY.

A MEETING of this Society was held on Feb. 19th at 11, Chandos-street, Earl RUSSELL in the chair, when a discussion was held on the

Law of Nullity of Marriage.

Dr. S. HENNING BELFRAGE, who opened the discussion, described the law of nullity of marriage as a law peculiarly bound up with the practice of medicine, and stated that in dealing with the medical aspects of this law he was giving expression to a purely personal point of view. The law of nullity of marriage was based on the jurisdiction of the ecclesiastical courts, consolidated in the Matrimonial Causes Act, 1857. The principles of this law were not so much definitely laid down as traditional, and they were interpreted with increasing elasticity. Several times judges had said that the state of the law was not satisfactory; this was not surprising, since cases coming under the law had medical and surgical aspects, and there had been wide developments of science since the rules were laid down. It was doubtful if originally the rules had in view anything but visible faults of development as grounds for nullity. Any structural defect preventing intercourse was accepted as ground for the granting of a decree, but cases in which evidence of such defect appeared were exceptions rather than the rule. In a suit for nullity the medical evidence was, of course, most weighty, but the court considered itself at liberty to infer a great deal from the attitude of the parties concerned. The usual case to-day was based upon abnormality of sex functions. In these functions were concerned not only the spinal and lower brain centres, but also the higher centres, subserving imagination, will, and intellect, and subject to profound disturbance by the emotions. Next to the functions associated with food, those connected with sex were the most important in the body; according to the Freudian school the latter actually overrode the former, and formed the strongest factor of mental life. All psychologists must recognise the essential part played by sex relations in every human being.

Types of Abnormal Reaction in Sex Life.

In practice there were three variations in type of abnormal reactions of women to marriage. The first variation was where the attempt to consummate a marriage called forth resistance accompanied by emotional disturbance. These cases were called hysterical, but the word did not correspond with the psychological meaning of the term. In genuine cases these reactions were not to be controlled; they constituted a true nervous reflex of a high order. The second variation was vaginismus, a condition regarded with scepticism in legal quarters but familiar to neurologists. Here there was local pain or hypersensitivity, often severe, being the expression of a buried mental complex which the sufferer was unable to recognise. The slightest touch might set up spasm in these cases, but the real trouble lay in the mind. In both of these types a defensive mechanism was at work; fear of the husband's approach set up a partly voluntary, partly involuntary reaction or emotional disturbance, and the courts had recognised the condition as an impediment for some time past. The third variation in type was that of wilful wrongful refusal. Here the woman, if able to give any reason at all, could give no real reason; there was no question of shyness, timidity, or tactlessness on the part of the spouse, and the woman's conduct appeared in all senses unreasonable. She might plead fear of bearing children, fear of disease, &c., but such pleas were merely camouflage of a morbid mental attitude in sex matters.

Wilful Refusal a Symptom of General Instability.

Should such women be held responsible or should incapacity be inferred in these cases? Both Divorce Court and Court of Appeal seemed lately to have gone out of their way to dismiss suits of this nature. Sir Samuel Evans had upon one occasion differentiated between refusal and "steadfast persistent" refusal, and had later refused to grant a decree in a similar case. Recently the court had not required evidence of structural defect. Since the refusal arose after marriage, it was at one time held not to be a ground for annulment, but this decision had recently apparently been reversed. In one case the wife had stipulated before marriage that there should be no intercourse for six months after the ceremony; the husband foolishly agreed, the war intervened and parted the couple for some years, and when the husband rejoined his wife she persisted in wilful refusal. Lord Dunedin held that there was no plausible reason for the refusal, but inferred that the wife began with an ante-nuptial aversion, and was the victim of an invincible repugnance; he therefore granted a decree of nullity. In all

such cases the medical man would easily find evidence of instability in other aspects of life. These refusals were not wilful; they resulted from lack of will power. They were not wrongful, for the woman could not see that her attitude was wrong. He would like to see these cases grouped together as containing factors which constituted a real impediment. The mental make-up on which the conduct of these women was based was a definite departure from the normal to an extent which annulled the purpose of marriage as regarded in the eyes of the law.

With regard to the incapacity of the husband, in the majority of cases this was dependent not on faulty structure, but on faulty action; in the absence of defect the judge might infer complete incapacity. Then there arose the point of the fallibility of the medical inspector's opinion concerning the wife's virginity; the signs of habitual intercourse were evident enough, but the state of the hymen, dilatation of the vagina, &c., might fail to be conclusive. He had felt that the court sometimes demanded from a medical man more than the latter could be reasonably expected to give. He thought that it was time that a committee was appointed, consisting of lawyers and medical men having experience in divorce suits, to consider and report on the whole problem of abnormal relations between husband and wife.

The Legal View.

Mr. R. F. BAYFORD did not propose to touch upon the medical aspect of abnormality which had been so ably put forward. The discussion related to nullity qua impotence, not to the wider law relating to such questions as marriage by fraud, under duress, &c. One subject which had not been touched upon was that of nullity of marriage on the ground that one party was incapable at the time through mental trouble. The law concerning nullity through incapacity to consummate marriage seemed to him to be simple and clear. He had been unable to find any real difference in the law as expounded during the past 200 years; the principle seemed clear, although it had been differently applied in different instances. To put it shortly—and apart from considerations of age of the parties, which was a matter of common sense—the law said that if either of the parties to a marriage was incapable of consummating that marriage, after reasonable efforts to effect a consummation, the other party had the right to apply for a decree of nullity. There must be incapacity before the decree could be granted; if one of the parties wrongfully refused intercourse, no decree would be made. The differences which arose were not in the law, but in its application. In these cases only two people really knew the facts; from what he had seen it was sometimes very difficult for a medical man to ascertain those facts. He instanced a case where a couple had been married for a considerable time, after which the man obtained evidence that his wife had gone away with another man, and had for two week-ends occupied the same room in a hotel with the latter. On that evidence he petitioned for a divorce; the wife countered with a claim for nullity, and the medical evidence was that she was virgo intacta. The wife obtained her decree and both parties subsequently married again; the man now had a large family. Another great difficulty concerned the parties themselves; both had to give evidence, and usually in those circumstances the woman had no real knowledge of what the act of intercourse was. The man was not infrequently equally ignorant. Both thought that they knew all about it, but, apart from the general superficial knowledge common to everyone, it was hard to know how far to believe their statements. One party might not turn up, or might decline to contest the case; then one wondered if the case were genuine. He believed, however, that very few cases were not genuine. There were few things which people, especially women, hated more than to be considered incapable of marriage; and in such cases they would fight hard. That feeling, which was nearly as strong in men also, was the greatest safeguard against fraudulent cases. He would hesitate to advise alteration of the law with regard to the inference of incapacity in cases of apparent wilful refusal, for the only effect would be to assist the obtaining of fraudulent divorce. Some cases from the ordinary human point of view gave the appearance of mere wilful refusal; he believed that in many cases the real fact was that the person was incapable, and that the refusal, apparently voluntary, was involuntary. With regard to the application of the law, he felt that very likely all that was wanted was education as to what was, in fact, a real inability to consummate a marriage.

Mr. NOEL MIDDLETON thought that in the old ecclesiastical court cases it was difficult to find instances where a decree of nullity was granted save when evidence was given of structural defect of some kind. But there was no doubt that the ecclesiastical law was sufficiently elastic to enable judges to move with the times. He believed with Mr. Bayford that it would be better for the community that the law be left as it was. It was dangerous to venture a definition as to what form of wilful wrongful refusal should be admitted as a reason for the granting of a decree of nullity. The most likely change which the legislature might make would be to admit wilful wrongful refusal as a ground for nullity; but one act of copulation would then be sufficient to enable one party to provide against the marriage being declared null and void, and little could be said in favour of such a change, for although one act might be consented to, all others might be refused. Any such change would, he thought, be fraught with great danger. The law was quite capable of advancing with the times and with the advancement of medical science. He held that in 999 cases out of 1000 the law was quite sufficient as it stood. With regard to the provision concerning incapacity, the court was on firm ground, and if properly instructed by the medical evidence could deal with widely differing cases. But beyond the rock of incapacity was a sea of difficulties, wherein it was impossible to reconcile the views of doctors and legal men. With regard to wilful wrongful refusal, he instanced a case where a boy and girl were married without apparently realising the meaning of marriage, and separated immediately afterwards, the girl going home and the boy back to school. The marriage was kept secret for a long period, until the young husband came to realise that he was grown up, and disclosed the ceremony. The girl's mother, not realising that the marriage was actually a marriage, forbade the girl to see her husband again. The man went abroad for some time, and on his return his wife wilfully refused to have anything to do with him. There was no medical evidence of any sort of incapacity or nervous trouble; and it might be considered a hardship that the man could not get a decree. It was a hard case, but hard cases made bad law, and had a decree been granted it would have helped to make bad law. With regard to Dr. Belfrage's suggestion that a committee be appointed to consider the state of the law, it would be valuable to have the medical aspect discussed, but if he were to give any evidence before that committee he would urge that they gave no sanction to any alteration of the law. He would, however, say to those medical men who gave evidence that the oftener they could impress the judge with the medical aspect of the case the better would be the law applied in that case.

Further Discussion.

Dr. GUY WOOD agreed with Dr. Belfrage to a great extent. The mental condition had to be considered in these cases, but doctors were questioned almost solely as to physical conditions. It was well that this point should be emphasised.

Mr. H. W. BARNARD agreed with Mr. Bayford and Mr. Middleton that any change in the law of nullity would be harmful to the community. He pointed out that any facility for divorce in such cases would present a loophole of escape for those who wished to

avoid a marriage which they had found distasteful. At present a nullity suit must not be prosecuted in collusion, and if that law were held to, it would be fatal to allow divorce in these cases.

Earl RUSSELL said that the law of nullity as a whole contained a great deal of humbug, much of which had, however, come to be valuable. Although the general principle of the law had not changed, its application was no longer limited to physical questions as it had been 200 years ago, when nerve storms and neuroses were not dealt with, or, at any rate, not admitted, in the courts. The lawyers present had all opposed a change in the law, but the courts did actually legislate by extending the law. Divorce on the grounds of wilful and persistent refusal might lend itself to collusion, but all such difficulties would be met if divorce after a period of desertion were adopted. He would mention one matter not entirely germane to the discussion—namely, the procedure in cases of suits for nullity of paupers. In these cases considerable charges were made by medical men, although legal services were rendered free. It would, he thought, be well if some authoritative medical body would consider the matter of these charges. As to whether some new statute should be made or whether the courts should be left to broaden the law to meet individual cases, he would point out that it was easy to legislate without a clear apprehension of what would flow from the legislation. Would medical men suggest what change might be made in the order to examine which they received from the court?

Dr. C. GRAHAM GRANT, speaking both as a lawyer and as a medical man, believed that marriage was a contract to which sex intercourse was vital, and if such intercourse was not carried out the contract should be set aside. He was convinced that when the law insisted that a contract be maintained between two parties who did not consent to it, then the law was bad.

Mr. NORBURY thought that in certain cases of wilful persistent refusal it would help if the medical man who had given evidence, and had heard the parties to the suit give evidence, were again called later and asked his opinion of the mental state of the persons concerned.

Dr. H. J. NORMAN felt that the discussion of the mental side of such cases would raise interesting points in the future. At present the views of the newer school of mental experts were in a state of flux. With regard to uncontrollable impulse, unless a definite mental trouble was present it was difficult to accept or support a plea on that ground. But a person might marry, never consummate the marriage, and break down mentally soon afterwards; he instanced a case of manic-depressive insanity where this happened, and emphasised the difficulty of such cases, in which the conditions of insanity might alternate with no intervals between them or might occur at prolonged intervals, the victim being completely sane between attacks.

Mr. G. C. TYNDALE said that some lawyers regarded with great uneasiness the present state of the law of nullity of marriage. Many people felt that the state of affairs in face of a wilful and wanton refusal was an abomination, the unfortunate petitioner having no release at all. He hoped the legislature would see to it that this old and genuine grievance was swept away.

Dr. BELFRAGE, replying, said that the most important thing was to get a definition of incapacity. He had not wished to urge an alteration of the law, and thought that such alteration would be very difficult. He would, however, suggest that the words "physical or nervous impediment" be included in the affidavit which a medical man was asked to supply to the court. The personal pride of the parties of which Mr. Bayford had spoken made the medical man's task no easier. His own feeling was that the judge, rather than counsel, required to be educated.

ROYAL SOCIETY OF MEDICINE.

COMBINED MEETING OF THE SECTIONS OF MEDICINE, NEUROLOGY, OPHTHALMOLOGY, AND OTOLOGY.

VERTIGO.

A MEETING of the combined sections was held on Feb. 26th to discuss the subject of Vertigo, Dr. ROBERT HUTCHISON, the President of the Section of Medicine, being in the chair.

The Standpoint of Medicine.

Sir HUMPHRY D. ROLLESTON opened from the standpoint of medicine. Accepting Mr. Sydney Scott's definition of vertigo as "a state of consciousness of the effect on motor centres of a want of harmony between afferent impressions," he said it could be held to include disturbances of the whole vestibular system, however caused, whether by organic lesions or by toxins acting directly on nervous tissues, or indirectly by inducing vascular spasm or dilatation. The afferent impressions, in the order of importance, were vestibular, ocular, kinæsthetic (muscular, articular, and visceral sense of movement). There must be reservations to any general rule. Gowers, who considered that 90 per cent. of cases of vertigo were aural in origin, referred, under the heading of "Pseud-aural Vertigo," to cases with slight evidence of labyrinthine disease, in which that authority supposed that a disturbance of function of the cortex set up by a slight peripheral derangement of the semicircular canals became gradually independent and purely central.

Diagnosis by Vestibular Tests.—Sir Humphry Rolleston said neuro-otology or analysis by the new vestibular tests enabled a diagnosis to be made of organic lesions of the vestibular apparatus, and in that way the points to be discussed by a physician could be narrowed down—as distinct from the specialist spheres of the otologist, the ophthalmologist, and the neurologist—to two chief categories: (1) What was the evidence that the action of toxins, transient vascular changes, or functional disturbances of the part of the cerebral cortex where the sensations concerned in equilibration normally met in harmony, might cause vertigo; (2) the ways in which general disease or visceral disorders affected the vestibular apparatus. Perhaps the vestibular tests could not be relied on to detect transient changes of the vestibular apparatus; hence in a case of vertigo in which, in the interval between attacks, the tests did not show abnormality, it might be impossible to determine that a passing functional disorder of the cerebral cortex was responsible, rather than one of other parts of the vestibular apparatus. Toxic, vascular, or functional disturbance at the cortical end of the vestibular system might occur, judging by epileptic aurae and borderland cases of epilepsy—viz., vertigo as an aura and the occurrence in an epileptic of vertigo without a fit. It would be interesting to hear if deaf-mutes with complete destruction of both labyrinths experienced vertigo when put under the influence of vertiginous drugs, such as quinine, alcohol, lead, and enterogenous poisons such as indol. A number of poisons due to defective metabolism were considered by many capable of causing vertigo; but at present one could not say where the transient disturbances causing vertigo occurred. Under the second heading, that of general disease, Sir Humphry Rolleston remarked that it had been said anaphylactic conditions might affect the semicircular canals. Some patients with hypersensitiveness, as shown by asthma and urticaria, had attacks of giddiness excited by taking certain articles of food, and the attacks ceased when those foods were no longer eaten. Parkes Weber thought it possible that angioneurotic manifestations in the labyrinth, by increasing the pressure of fluid in relation to the semicircular canals, might cause vertigo; and Vernet suggested that endocrine disorders might produce it by modifying the vasomotor conditions in the vestibular

labyrinth, and therefore advocated the oral administration of adrenalin. But knowledge on this was as yet uncertain.

Gastric Manifestations and Vertigo.—He said the gastric manifestations and vertigo were now widely regarded as concomitant effects of vestibular disturbance instead of standing in the relationship of cause and effect. Yet gastro-intestinal disturbance could conceivably be a primary cause of vertigo, either reflexly through the brain-stem, or by generating poisons which might act directly on the vestibular system. Sometimes vertigo was thought to be due to biliousness, and it might be that the hepatic insufficiency prevented the neutralisation of enterogenous poisons, such as indol. In two recent cases of headache and vertigo Holmes found an excess of uric acid in the blood and the symptoms disappeared when this excess was corrected.

Vertigo and Arterial Disease.—The association of arterial disease with vertigo could be explained in several ways. The high blood pressure, which so commonly preceded and caused arteriosclerosis, was associated with increased pressure of the cerebrospinal fluid and of the extra-labyrinthine fluid, and great variations might occur in both. And the vessels in this disease were more than normally prone to spasm and the latter had been stated to be a cause of vertigo. Attacks of vertigo might be due to transient cortical anæmia depending on vascular spasm. It was interesting to note the occurrence of vertigo in the Stokes-Adams syndrome, and its absence in simple heart-block. In cases of arteriosclerosis combined with renal disease vertigo could be explained in several ways. Embolism of the vessels of the labyrinth, such as might occur in malignant endocarditis, might so modify the conditions in the semicircular canals as to cause vertigo. Possibly the giddiness of caisson disease was due to embolism of bubbles of nitrogen in the vessels of the labyrinth, and the large arc of the cerebral cortex might be similarly affected. Laryngeal vertigo had been explained in various ways, and with regard to blood diseases, both anæmia and erythræmia might sometimes cause giddiness; the question was on what part of the apparatus the altered blood exerted its influence. In erythræmia, probably plethora would affect the vestibular labyrinth more readily than the central nervous system.

In conclusion Sir Humphry Rolleston referred to paralysing vertigo, described as occurring in small epidemics around Geneva in the eighties, by Gerlier. Since 1901 the disease had not been seen. It appeared in the summer and vanished with the onset of cold weather, and was confined to agricultural labourers or shepherds. It was considered to be due to stable infection. It appeared never to have been fatal.

The Neurological Aspect.

DR. GORDON HOLMES discussed the subject of vertigo as arising from diseases of the central nervous system. He referred to the difficulty of ascertaining what was the exact condition to which the patient applied the term dizziness or giddiness. There was a tendency to regard the patient as stupid, but in any attack of vertigo there was always transient mental confusion and marked inattention. Another difficulty was to exclude all peripheral factors, especially lesions involving the semicircular canals and labyrinth, and producing vertigo either temporarily and directly or secondarily leading to an instability of the central nervous system or some portions of it. He set out the classification of vertigo which had been of practical use to him.

Classification of Vertigo.—The first class were the cases in which the vertigo arose from local lesions involving the central connexions of the vestibular nerve. The portions of the central nervous system which were only indirectly connected with the labyrinth, parts of the medulla, pons, cerebellum, and the mid-brain. Intra-medullary causes were probably less common. Vascular lesions of the cerebellum were not uncommon, and in these vertigo was frequent. He did not think pure cortical vascular lesions, such as small softenings on the surface of the cerebellum, often caused giddiness, but when the softenings extended to the central nuclei, particularly when they involved the peduncles, vertigo was very common. Tumours, especially of pons and cerebellum, were perhaps an even more common cause. And degenerative processes, affecting chiefly the cerebellum, and frequently the pons, might cause vertigo, but not so dramatically.

The second group of focal lesions to be considered were those in the fore-brain, especially in the cerebral cortex. He did not know of any unequivocal evidence that any form of disease of the basilar ganglia, or even the deep portions of the central white matter of the brain, caused vertigo in a direct way. But any lesion of the cerebral cortex that produced spasmodic phenomena could cause vertigo; tumours of the frontal lobe of the brain were a good example of this.

In his third class he placed vertigo, which was merely a symptom of another disease, occurring as an equivalent manifestation in epilepsy or migraine. Vertigo was not uncommon in epilepsy, first as a warning of the attack, and secondly replacing the attack. People who suffered from migraine seemed more liable to have vertigo, quite apart from their megrinous attacks.

His fourth class were subjects of hysteria. He asked whether vertigo was ever a hysterical manifestation. His own view was that vertigo was never due to hysteria, though the symptoms of the latter were so protean that the patient would frequently complain of what seemed to be vertiginous manifestations.

The Ophthalmic Standpoint.

MR. J. HERBERT FISHER introduced the subject from the ophthalmological point of view, giving his own personal observations. He referred first to objective localisation or objective orientation. Disorder of this might lead to metamorphopsia, polyopia, and errors of judgment, but he did not think it ever caused true vertigo, though when other factors were present, it would add to the mental confusion. It had been said that unaccustomed visual sensations might, per se, cause vertigo, and he believed that unperceived ocular movements played the important part in causing the vertigo resulting from gazing at a waterfall. Patients often used the word giddiness in a sense which was far from scientific or accurate; but correction of astigmatism by oblique cylinders certainly disturbed ocular judgments, and refraction errors should not be ignored in dealing with cases of vertigo. The relative values of objective and subjective orientation was an interesting question. In a man with only one eye available, no sense of vertigo was experienced Abnormal impulses from disordered ocular muscles might reach Deiter's nucleus in the cerebellum, and in the latter might provide reflex irritation of the labyrinthine nerve centre, and thus a sensation of vertigo. This was at least worthy of consideration in regard to the vertigo of insular sclerosis when nystagmus was present. Vertigo was a frequent symptom in disseminated sclerosis. When ophthalmoplegia externa was also present, the resulting diplopia would add further to the confusion of the visual judgments. He gave a number of reasons for his belief that the sense of vision contributed to equilibrium only when it affected consciousness through the higher perception centres. He regarded equilibrium as a subconscious process maintained by tactile and muscular sense, and provided for, above all, through the semicircular canals, the vestibular nerve, and the cerebellar centres. To the sum total of muscular sense the muscles of the eyeball contributed their quota; disorder of the muscular and tactile elements of balance produced incoördination, which might suffice to cause stumbling movements, or loss of equilibrium sufficient to produce a fall without originating any perception of vertigo. The higher developed special

sense of vision could operate only as a higher mental perception. Normal visual impulses, normally projected on the sensorium, contributed to equilibrium, and might be able to control a vertigo generated by disorder of other mechanisms. Unaccustomed impulses generated by a disordered retina would produce no sense of vertigo if they were normally transmitted to and projected upon the sensorium, though they might disorder visual judgments.

The Otological Side.

Mr. SYDNEY SCOTT, by means of an instructive series of slides, dealt with the otological side of the question. If a patient was able to hear the very low tones on the musical scale, the fenestra of the labyrinth could be adjudged intact. In general, inability to hear low tones indicated an interference with the ossicular apparatus of the middle ear, and when the lowest heard tones were quite high, there was present a more gross lesion than fixation of the ossicles. Two cases in which this was so were found to have auditory nerve tumours. When a patient subject to vertigo afterwards became deaf, he ceased to be giddy.

Conditions met with in Otology causing Vertigo.—With regard to the conditions met with in otological practice which set up vertigo, it was either an interference with the normal labyrinth or a destruction of the normal labyrinth. He showed slides of middle ear infections which had destroyed the membrana secondaria and set up a process of disintegration. Another class of causes interfering with the labyrinth were those in the region of the auditory nerve itself. He had seen over 40 cases of tumour in the lateral recesses which had affected the auditory nerve and caused marked deafness and vertigo; in some of these there had been vertigo without deafness, and in the latter the lesion had not been in the recess angle, but lower down in the nuclei in the medulla—i.e., the cochlea escaped and the vestibular nerve was involved. Concerning the effect of destruction of the labyrinth as a whole, he showed the photograph of a dog whose labyrinth was destroyed, to illustrate the characteristic stance due to the ablation, with displacement of the head and abduction and slight extension of the extremities. He proceeded to discuss, by the aid of a diagram, the mechanism of the vestibular reactions and tests, and the influence of various diseases, especially sinusitis, in causing vertigo. He concluded by drawing attention to the importance of making proper tests before arriving at conclusions as to the condition present.

Sir JAMES DUNDAS-GRANT said that one point was the difficulty of diagnosis in the cases which came suspected of being Ménière's disease, cardiac syncope, laryngeal syncope, petit mal. Small doses of quinine had an extraordinary action in checking, and almost stopping, the attacks of aural vertigo. If in a unilateral case the quinine did not diminish the vertigo, probably it was not a case of semicircular canal defect. He thought the quinine equalised the two labyrinths by its sedative action on the sound one. In the normal state the movement of the stapes and of the membrane of the round window acted as safety valves, and there might be a small vascular increase of pressure in the internal ear, but it did not cause disturbance because the two safety valves acted, but when they were fixed this action was lost. That, he thought, was the explanation of Mr. Sydney Scott's observation that one could often check the vertigo by compressing the carotid. In some of the worst cases the speaker had had to deal with, the cause had been cholesteatoma. With regard to the sympathetic, there had been experiments carried out recently on the action of the sympathetic nerve on the circulation by pressure in the labyrinth, and the consequent changes in the responsiveness of the labyrinth to the caloric tests. One German experimenter blocked up both the vertebral arteries just as they entered the skull, and also tied one carotid canal, so that the circle of Willis was supplied by only one carotid. The experimenter then tested the rapidity of response to the caloric test in the ear on the same side as the open carotid and observed the length of time needed to induce nystagmus. He then stimulated the sympathetic in the neck on that side, and it caused contraction of the blood-vessels, and a great deal longer was required to induce a response to the caloric test. The speaker's own observation was that the vertebral canals could be digitally compressed in the living subject by exerting the pressure in the sub-occipital triangles, at a point a little below the level of the mastoid. He tried the effect in a normal person of compressing the vertebrals in this way and found that it took distinctly longer to induce while this pressure was being maintained. He also referred to the fact that the late Sir Victor Horsley accepted Mills's localisation of a centre for the sense of equilibrium in the temporal lobe. Concussion, he considered, was a frequent cause of vertigo. Erichsen had pointed out that in "railway spine" following upon concussion, great relief was obtained by taking small doses of perchloride of mercury, so that patients would often return and ask for the medicine to be repeated. The speaker had found that drug had the same effect in the case of the vertigo caused by concussion.

Reviews and Notices of Books.

DIPHTHERIA: ITS BACTERIOLOGY, PATHOLOGY AND IMMUNOLOGY.

By FREDERICK W. ANDREWES, WILLIAM BULLOCH, S. R. DOUGLAS, GEORGES DREYER and A. D. GARDNER, PAUL FILDES, J. C. G. LEDINGHAM, C. G. L. WOLF. London: H.M. Stationery Office. 1923. Pp. 544. 12*s.* 6*d.*

THE latest monograph of the Medical Research Council, appropriately dedicated to Emile Roux, has been designed by its authors to cover the whole range of our scientific knowledge of diphtheria. It was a great task to attempt, and its execution is worthy of the Bacteriological Committee of the Council. The work as it stands is not a collection of independent chapters revised by a single editor, but all the seven bacteriologists take collective responsibility for the whole. No comprehensive work on the bacteriology of diphtheria has been issued for the last 15 years, and a glance at the bibliography in this monograph, which runs to more than 100 pages, shows how desirable it is to have the research of the last decade presented in a compact form. The modern story of diphtheria started with a brilliance which could hardly be maintained, for Behring's discovery of antitoxin—one of the greatest ever made in medicine—was fortunate in connexion with a disease in which antitoxic immunity counts as in no other.

The volume opens with a chapter on the history of diphtheria which recalls the antitoxin treatment by Geissler of the first child in v. Bergmann's clinic in Berlin on Christmas night, 1891, and Amand Ruffer's notable service in producing the antitoxin at the Lister Institute (then called the British Institute of Preventive Medicine) early in 1895. The second chapter deals at length with the bacterial genus Corynebacterium, a sub-group proposed by Lehmann and Neumann, accepted by the Society of American Bacteriologists, and now adopted by the Council. The term diphtheria bacillus is used throughout the monograph as synonymous with *Corynebacterium diphtheriæ*. The third chapter treats of the toxin of the diphtheria bacillus, its composition, preparation, and properties. Although a certain amount of experimental evidence suggests that the washed bodies of diphtheria bacilli exert a poisonous action distinct from that of the toxin proper, the authors hold, nevertheless, the belief to be justified that endotoxin does not play any significant rôle in the causation of symptoms. A very interesting chapter sets out the relation between diphtheria antitoxin and other antibodies, leading up to the conclusion that the antitoxic power of diphtheria antiserum is undeniably its most important property, the theory

that sera possessing full anti-bacterial powers (bacteriolysis, agglutination, &c.) would have a greater therapeutic efficacy remaining unproved. A full account is then given of the pathology of the disease, experimental and natural, the diphtheria bacillus producing general lesions mainly through the absorption of its toxin into the circulation. The gross anatomical lesions met with after death are very varied, and the report emphasises the difficulty of separating the action of the diphtheria bacillus from that of other micro-organisms which may be present. Under the heading of laboratory diagnosis, it is pointed out that the three racial sera prepared by A. S. G. Bell cover a considerable proportion of the diphtheria strains occurring in this country, and that where these sera are available an unequivocal positive result may be regarded as good confirmatory evidence of the nature of a doubtful bacillus.

A chapter on the serum treatment of diphtheria contains much information of value to the practitioner. Serum sickness is considered as an instance of allergy allied to, but not identical with, anaphylaxis, and the authors question whether true anaphylactic shock ever occurs in man. Nevertheless, intravenous reinjections should be reserved for the gravest and most urgent cases. The chapter on the incidence and spread of diphtheria includes a full description, with excellent coloured plates, of the Schick test and the subsequent toxin-antitoxin immunisation. The results obtained by W. H. Park, in the Brooklyn and Manhattan schools, are duly set out, and the conclusion reached that this mass effort reduced the number of cases of diphtheria to one-fourth—promising enough, when it is borne in mind that most of the immunisations were carried out by methods since superseded. An interesting section deals with the disputatious matter of the spread of diphtheria by animals; while scabs in cows are clearly not due to diphtheria, yet under some conditions, the authors admit, they may be a factor in its spread. Diphtheria may be superimposed on another infection owing to the habit of milkers spitting upon their hands. On the other hand, the circumstantial stories of cats suffering from typical diphtheria and transmitting it to children do not bear close serological examination. W. G. Savage found that the diphtheroids present in cats' throats produced no acid in broth.

In the chapter on prevention the question of the disinfection of carriers is set out with references. As far as available records go, the only form of treatment which appears to have decisive results is operative removal of infective tonsils and adenoids; since the carrier is himself immune to diphtheria, the harmless results of this operation are in keeping with expectation. A final chapter on diphtheroids is a remarkably readable presentation of a subject apt to be neglected except by the bacteriologist. No doubt, could once the systematic position of the non-virulent *C. diphtheriæ* be satisfactorily cleared up, the study of the parasitic diphtheroids of man and animals would become a botanical pursuit. At the present time this stage is far from being reached: even the morphology of individual strains of corynel acteria on the same medium, under the same conditions, is by no means constant.

As an exposition of the existing stage of knowledge in regard to diphtheria, this monograph will prove of great value to the medical profession and to scientific workers generally. Not the least, as the preface indicates, will it serve a purpose in showing how imperfect is our knowledge of diphtheria even at the present day, and in stimulating further research upon the problems as yet unsolved.

PSYCHOLOGY AND MORALS.

By J. A. HADFIELD, M.A. Oxon., M.B., Ch.B. Edin., Lecturer in Psychology, King's College, London. London: Methuen and Co. 1923. Pp. 186. 6*s*.

SEEKING to provide moralists with that knowledge of psychology without which moral teaching so often fails, Dr. Hadfield brings together some practical applications of modern theories and gives in rather dogmatic form, for which his preface frankly prepares us, his own interpretation of those theories. The simplicity thus attained is sometimes deceptive, as when he writes that it is unnecessary to deal with the "transference." Dr. Hadfield is fortunate if he has never met that hostile transference which nullifies all treatment until it is dealt with. There still appears to be a moral significance attached to the question of "free-will," and the author's efforts to reconcile it with psychic determinism are rather confusing. The merit of the book lies in showing that the recognition of impulses is necessary for a practical morality. This leads up to the psycho-analytical distinction between repression and control, processes often diametrically opposed and yet regarded as identical by those who think of psycho-analysis as teaching that we should allow a free rein to our instincts. As Dr. Hadfield says, "We cannot control our instincts as long as we repress them." The definition of "moral law" is difficult, and the author's confidence in its existence, "written on the tables of the heart," seems to rest, in spite of his protests to the contrary, upon what society approves or ostracises (p. 140). As a working principle this is excellent, but it scarcely possesses absolute validity. The book fulfils its main purpose, and should be of help to those who do not realise what psychology has to offer in the understanding of the nervous, the delinquent, and the many other misfits of modern life.

ANATOMY AND PHYSIOLOGY.

A Text-book for Schools of Nursing, Normal Schools, and Colleges. By JESSE FEIRING WILLIAMS, M.D., Professor of Physical Education, Teacher's College, Columbia University, New York. London and Philadelphia: W. B. Saunders Co., Ltd. 1923. Pp. 523. 15*s*.

PROBABLY no task with which an instructor in physiology is faced is so difficult as that of teaching beginners who have no knowledge of anatomy or biology, physics or chemistry. It is difficult to know where to begin. The author of this volume begins with the structure of the cell, the formation of the embryo, the simple tissues, and then leads on to the skeleton, muscles, and nervous system, before considering the circulation and other visceral systems. We do not much like this arrangement, logical though it may seem, but this is the only criticism we have to offer in reviewing this excellent little book. The illustrations are clear and up to date, the text is well written, and shows that the author has a real grasp of his subject, and the references to pathology and medicine make the book very valuable to the readers for whom it is intended. Directions for useful practical exercises, more for the guidance of the inexpert teacher than for the student perhaps, are included. If the book is used in conjunction with clear and simple lectures, students will get a very good idea of physiology from it.

ENCYCLOPÆDIA MEDICA.

Second edition. Vol. X., Obligate to Potash. General Editors: Vol. I.–VIII., J. W. BALLANTYNE, M.D., F.R.C.P.E. Vol. IX.–X., ALEXANDER GOODALL, M.D., F.R.C.P.E. Edinburgh: W. Green and Son. 1923. Pp. 672. 30*s*.

THE Encyclopædia Medica is so arranged that long articles are written on important subjects, while others of less moment are passed over in a few lines. The articles for the second edition have, in many cases, been entirely rewritten, while there is one new article. Prof. J. A. Milroy, discussing the physiology of the pancreas, gives a very good account of the recent work on the functions of the organ with especial relation to the internal secretion. The two kinds of cells in the islands of Langerhans are described, but an important point in the proof of the connexion of the cells with diabetes, supplied by Allen's partial pancreatectomy and overfeeding with sugar, has been omitted. Reference is made to the new work suggesting that the sugar present in the blood of

normal persons is in the γ form, whereas in the patient with diabetes mellitus this is not the case.

A clear account is given of the discovery and properties of insulin. It is a great advantage to have this article brought so thoroughly up to date. The section on the diseases of the pancreas, which does not include diabetes mellitus, is well written. The description of acute pancreatitis and its treatment should be especially useful. The new article on oxygen has been written by H. Whitridge Davis, and gives a clear account of the present standpoint of physiology. Seeing that pneumonia is also dealt with in this volume, it is an advantage to have the therapeutic uses of oxygen set out here. The point is made that oxygen should be given early and that the patient should be prevented from becoming cyanosed. The various methods of administration are described and are placed in the following order of election: (1) an oxygen chamber; (2) the Haldane mask; (3) various emergency methods. Oxygen chambers are rarely available. The Haldane apparatus has many advantages and is most useful for the mild cases, but often cannot be tolerated by the seriously ill patient. When this is so, a funnel must be used, and as Dr. Davis points out, this is a wasteful method. No note is taken in this section (although it is mentioned in that on the treatment of pneumonia) of the use of a nasal catheter, which can often be tolerated when the mask is rejected, and is an improvement on the funnel method. Pneumonia is dealt with fully, both from the bacteriological and the clinical side. A detailed account is given of the five types of pneumococci and the methods of distinguishing them. Statistics as to the value of the serum here given appear to indicate that however useful serum may be for the treatment of pneumonia in small animals like the mouse, it is of no great value for large ones like monkeys and man. The prophylactic use of vaccines in the prevention of pneumonia is discussed; the evidence seems to point to a reduced incidence and a diminution of the severity of the infection. This section on pneumonia is full of information, and should be of the utmost use to the practitioner faced with a severe case of the disease.

The editing has been well done, and the encyclopædia is of definite importance as a work of reference for medical men.

GERIATRICS.

A Treatise on the Prevention and Treatment of Diseases of Old Age and the Care of the Aged. Second edition, revised and enlarged. By MALFORD W. THEWLIS, M.D. With introductions by A. JACOBI, M.D., LL.D., and I. L. NASCHER, M.D. London: Henry Kimpton. 1924. Pp. 401. 21*s*.

IN the treatment of many complaints in the aged Dr. Thewlis urges especial attention to the condition of the kidneys. In the chapter on Senile Heart Disease, in that on Senile Rheumatism, and, again, in the discussion on the Complications of Senile Nephritis, the author emphasises the importance of nephritis. He states (p. 133) that "senile nephritis is one of the most treacherous conditions we are called upon to treat, because there are many complications that develop in organs which are distant from the kidneys, while the latter organs frequently display little evidence of disease. In other words, we may find serious symptoms, for example, in the brain, due to uræmia, yet the urinary picture may not be serious." Some cases of senile nephritis may be connected with old syphilis, and the author points out that the diagnosis in such cases is a most important matter with regard to the treatment to be adopted. In the chapter on Senile Bronchitis (p. 193) it is mentioned that a diet for nephritis will be satisfactory, even though the patient may not have nephritis. A microscopic examination of the urine should be made to discover whether the kidneys are diseased, since the latter is a common cause of senile bronchitis. Even of senile chorea, kidney disease is considered a possible cause!

In very rebellious cases of senile pruritus the author refers to good results obtained by the cautious use of radium or X rays. One chapter is devoted to the curability of some cases of hepatic cirrhosis and ascites. The author holds that some of the worst cases of "gin-drinker's liver" are seen in men who have been total abstainers all their lives. Ascites is more likely to be cured when the hepatic cirrhosis is hypertrophic. Atrophic hepatic cirrhosis is, of course, incurable, although regeneration of liver substance occurs. The use of alcohol is recommended in certain conditions. Special chapters added in the second edition are those on Electrotherapy and Opotherapy. One of the author's most characteristic chapters remains practically unaltered. It is entitled Keep Senile Cases out of Bed, and ends thus: "Getting out of bed spurs the aged sufferers to fight their battle more courageously. After all . . . the important thing is to encourage them and to give them plenty of attention. A talk about things that interest them sometimes has a better effect than medicines."

INFANTILE SURGERY.

Précis clinique et operatoire de chirurgie infantile. By L. OMBRÉDANNE, Surgeon to the Hospital for Sick Children, Paris, Paris: Masson et Cie. 1923. Pp. 1139.

The author of this excellent work points out in his preface that the surgeon who specialises in diseases of children must practise all the surgical specialties with the sole exception of ophthalmology. The book therefore covers a very large field extending from oto-rhino-laryngology to orthopædic surgery, leaving obvious and inevitable gaps in each specialty, but forming a very well-balanced whole. If the pathology is at times a little vague and the embryology occasionally unorthodox according to modern English views, the excellence of the clinical study of the cases and of the descriptions of operative procedure and after-care more than compensate for this. There is no bibliography; the author writes almost exclusively from a large personal experience which amply warrants his well-defined and dogmatic views. The book can be thoroughly recommended to those interested in children's surgery; they must be prepared to find divergences from English practice. The French is easy to read, and the copious illustrations are quite clear.

POISON MYSTERIES IN HISTORY, ROMANCE, AND CRIME.

By C. J. S. THOMPSON, M.B.E. London: The Scientific Press, Ltd. 1923. Pp. 412.

THE subject of poisons is a very interesting one, though it is a little difficult to see why poison mysteries are almost automatically called romantic. Crime by the agency of poisoning frequently presents absorbing legal and medical problems, but the central actions are almost invariably sordid and not romantic. The influence of poisoning on history is undoubted, but how great that influence has been we can never know, because it was almost a recognised political game to allege that the sudden disappearance of a monarch, an heir, or a minister, whose presence was inconvenient to any political party, had been removed by the instrumentality of poison at the instance of that party.

In the first part of Mr. Thompson's book there are collected notes at greater or less length upon most of the historic poisoning cases, and in this section there are also some distinctly interesting chapters on the curious methods employed by certain villains, and upon the love-philtres which have played a part in social life from the oldest days. The second part of the book tells the stories of 20 or 30 well-known murder cases: here the author is for the most part going over quite old ground, and a large number of the stories have been published with far greater detail. It is convenient, however, to medical men to have an outline of these stories bound up in one volume of so convenient a size, when further medico-legal details will be accessible where they are required.

Mr. Thompson's compilation is well written and readable from cover to cover. He has only designed to give outlines of his subjects, and these are clear and accurate.

The Conduct of Medical Practice.

A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.

IX.—CERTIFICATION IN INSURANCE PRACTICE.

BY LEONARD SHOETEN SACK,
OF THE MIDDLE TEMPLE, BARRISTER-AT-LAW; JOINT AUTHOR OF "MEDICAL INSURANCE PRACTICE."

. . . . report me and my cause aright
To the unsatisfied.—*Hamlet*, Act v., Sc. 2.

THE evidence given at the recent capitation fee inquiry indicated that certification is the most criticised of the many duties required of the insurance practitioner. The profession contend that the certification rules are quite unnecessarily complicated and onerous. The case prepared by the Insurance Acts Committee went so far as to describe them as "oppressive and menacing," and expressed the view that they were not designed to secure to the insured person the sickness benefit properly due to him, but rather required the doctor to perform a service to the approved society under a threat of penalty. This expression of opinion is significant, because in no other respect did the profession complain that the panel doctor's duties are *unnecessarily* burdensome. The approved societies, on their side, allege that their funds suffer serious loss through loose and irregular certification.

Certification has necessarily a very real bearing on the whole financial structure of the national insurance scheme. Out of the total £22 million spent on benefits in England and Wales in 1922, more than £11½ million was for sickness and disablement benefit, and represented cash paid out to individual insured persons on the evidence of the doctor's certificate. This financial aspect was recognised by the Government in 1913 when a Departmental Committee was set up to report on the sickness benefit claims. The outcome was the appointment in 1920 of the regional medical officers, whose principal duty it was to act as referees to settle doubtful or disputed cases of incapacity. The number of references to these officers increases each year. The total references for England and Wales during the first three-quarters of 1921, 1922, and 1923 were 46,338, 81,200, and 107,242 respectively. In all, 288,728 cases had been referred up to September, 1923. In 52,558 of these—18 per cent.—the R.M.O. decided that the patient was capable of work, while in 41 per cent. of the cases the patient failed to attend for examination, usually no doubt, because he had meanwhile been certified as fit. While these figures do not necessarily connote widespread carelessness or wilful irregularity, they do suggest that health insurance certification is not yet fully satisfactory, and in particular that considerable difference of opinion exists as to the circumstances which justify the conclusion that a patient is incapable of work.

Doubtful Incapacity.

The certification of incapacity may obviously present considerable difficulties. A detailed discussion of those difficulties would involve medical considerations into which it would not be proper for a layman to enter. No precise definition of "incapable of work" has been officially issued, and it seems clear that no administrative decision or financial consideration should materially limit the professional judgment of the doctor. But cases arise where the question is not solely medical. Where the illness is one from which the patient is likely to recover within a reasonably short period, the only consideration is whether, for the time, he is capable of following his normal occupation or employment. Where, however, the illness is protracted or chronic, the question will, at some stage, arise as to whether the patient, although still incapable of following his previous occupation, is able to undertake some other remunerative work. The latter question, it may be argued, is one on which it is scarcely fair to expect the busy general practitioner to form a considered opinion, for it may involve inquiry into non-medical matters—e.g., the kind of remunerative occupation which is, in fact, available. It is true that the responsibility for deciding for how long cash benefits should, in such cases, continue rests with the approved society, but the doctor has still to decide when the incapacity certificates shall cease. Now these are typically cases which, it is suggested, should be referred to the R.M.O. It is one of the specific duties of that officer to decide cases of this kind, and there seems no reason why the practitioner should not free himself of unnecessary responsibility by taking advantage of the machinery which has been provided. At present, nearly all R.M.O. references are originated by approved societies and this tends to create an impression unfavourable to the doctor. It is sometimes feared that such references will involve loss of time to the busy doctor, in view of the requirement that he must attend at the examination if required to do so. In practice, however, the R.M.O. studies the convenience of the doctors and does not unnecessarily require his attendance. In any case, a reference by the doctor himself will ordinarily involve less annoyance and loss of time than will an ultimate reference by the approved society.

Obliging the Patient.

Most of the irregularities in certification can be traced to a few causes, which will here be briefly discussed. It is proposed to exclude from consideration cases of wilful misfeasance. A glance at the figures of certification complaints investigated by insurance committees suggests that such cases are relatively rare. The total number investigated by all committees in the British Isles from 1920 to 1923 was only 434, representing approximately one complaint for every 30,000 insured persons over a period of nearly four years; even in these cases the offence was sometimes trivial, and not infrequently the action of the doctor was upheld.

One fruitful source of trouble has been the attempt by the doctor to assist a patient in a technical difficulty. The certification rules definitely provide that:—

1. A First or Intermediate certificate need be issued only at the request of the patient.
2. A Final certificate, whether asked for or not, must be issued as soon as the patient is found to be fit to return to work; but it may not be issued if the patient has already returned to work.
3. All certificates must be given within 24 hours of the examination to which they relate.

Cases frequently arise where a patient neglects to ask for a first or intermediate certificate at the time of examination and subsequently (more than 24 hours later) applies for a certificate to produce to his society. Or a patient who has been receiving intermediate certificates may return to work without consulting his doctor and may subsequently ask for a final certificate. Hitherto the doctor has not, in such cases, been allowed to use one of the official forms, and he has had to choose between either writing out a special manuscript certificate or explanatory letter (probably resulting in further inquiries from the society) or refusing a certificate with possible loss of benefit to the patient. In these circumstances many doctors have felt themselves justified in using the regular form of certificate in "technical" breach of the regulations.

The voluntary certificate introduced last January meets these cases and, if properly used, should entirely remove this particular form of irregularity. The certificate states that the patient was examined on particular dates and was, in the doctor's opinion, incapable of work during a specified period. It is expressly intended for use where, through any action on the part of the insured person, the issue of one of the regular certificates is forbidden. It is issued at the doctor's discretion and the doctor is allowed to charge for its issue.

In future, therefore, a safe rule will be that in cases of doubt *due to the action of the patient*, the voluntary certificate should be issued. Thus, the patient's interests are served by providing the society with the necessary evidence; the action taken on that evidence is, of course, a matter solely for the society. The voluntary certificate should not be used when the irregularity is due to the doctor's own action. For example, if the patient duly asks for a certificate at the time of examination, but the doctor, not having one at hand, neglects to send one within 24 hours, the regular form of certificate should be used, the actual dates of examination and of signing being entered.

Handy Certificate Books.

Complaints of irregular certification have, again, often arisen because the doctor had not the appropriate form to hand at the time of examination, and the writing of the certificate was afterwards delayed, perhaps through a succession of urgent calls. This has sometimes led to formal complaints of wilful retrospective certification. The difficulty is now largely removed by a more convenient printing and binding of the certificates. Excepting the voluntary and death certificates, which are printed separately, there are now only two forms; on one is printed the ordinary first, intermediate, and final certificates, while the other contains the special intermediate and convalescent certificates. Moreover, all the certificates, with the sole exception of the voluntary certificate, can be obtained bound in one book in suitable proportions; this book includes even the special notice to be given when intentionally vague certificates are issued. The doctor can, therefore, now conveniently carry a selection of every form of certificate required. Although the ordinary and special certificates are also issued separately in two books, the possession of a composite book by every doctor should prove of considerable convenience, particularly as an addition to his emergency kit.

Pressure by Societies.

There is ground for legitimate complaint that while the approved societies actively criticise irregular certification, they not infrequently, either directly or indirectly, themselves bring pressure to bear on the doctor to vary his normal certification practice. Sometimes the patient will press for a certificate which the doctor considers not to be regular, urging that it is being demanded by the society; sometimes the society's agent may press for certificates to be given on special days to accord with the society's paying-out time.

Coöperation between the doctor and the society is obviously desirable where it can be attained with due regard to the doctor's work and to the patient's interests. The sole discretion as to the withholding of a certificate or as to the date of a patient's examination rests, however, with the doctor, and it is believed that there would be a considerable improvement in the whole system of certification if the doctors more resolutely refused to issue certificates in circumstances of doubt until the doubtful point had been decided by the competent authority. The complaints so querulously voiced about certification irregularities on the part of doctors seem often to overlook the difficult position in which the doctor may be placed through irregularities on the part of the patient. It rests, however, largely with the doctors themselves to encourage a stricter observance of the regulations by the insured persons. The regional medical officers, the insurance committees, and the health insurance inspectors are the authorities available for deciding cases of doubt, and the maximum use should be made of their services. The patient who, in the doctor's opinion, improperly presses for a certificate should be referred for advice to the local inspector; while the doctor should seek the guidance of the insurance committee.

Diagnosis.

While societies have complained that the incapacitating cause is often not sufficiently indicated on the certificates, the profession have resented inquiry by societies into the adequacy of diagnosis. The certification rules, as the reader knows, provide that the incapacitating cause shall be stated as concisely as the doctor's knowledge of the patient's condition permits. On this point only two observations can here be made. Many societies have now formulated schemes for additional benefits, and those schemes sometimes provide for defraying the cost of certain special forms of treatment, which do not fall within the scope of medical benefit. It is, therefore, clearly to the patient's interest that the incapacitating illness should be shown with sufficient clearness to enable the society to consider whether the member should be assisted in obtaining special treatment. Further, now that the composite certificate books include the special notice to be given to societies when intentionally vague certificates are issued, the plea that the special form was not available can offer no excuse for the practice of "covering up" the real incapacitating cause by indicating some resulting condition—e.g., debility—just sufficiently to avoid "vagueness."

THE COÖRDINATION OF INTERNATIONAL RED CROSS ACTIVITIES.

IT will be remembered that the Eleventh International Red Cross Conference, held at Geneva in August, 1923, decided to appoint a commission to consider the international organisation of the Red Cross, and to submit a report on the subject, together with a draft statute, to the national Red Cross Societies. A conference composed of delegates to these societies was subsequently to be summoned to decide on the question of organisation. The difficulties to be solved arose from the existence side by side of two organisations, the International Red Cross Committee, formed in 1863, with its headquarters at Geneva, and the League of Red Cross Societies, formed in 1919, and established at Paris. These two organisations vainly endeavoured to arrive at an agreement; the matter was therefore placed before the conference which decided to make an attempt to deal with the difficulty by referring the question to the national societies. The commission of inquiry, formed in accordance with this decision, was composed of 15 members; 13 represented the national societies, whilst the remaining two represented the International Red Cross Committee and the League of Red Cross Societies.

The commission met for the first time at Brussels in November, 1923, when a general discussion took place. It appeared that the majority of the members were in favour of a solution whereby the harmonious working of the International Red Cross should be ensured by means of the practical coördination of its various services—a solution equally removed from the present overlapping existing between the International Red Cross Committee and the League of Red Cross Societies, and from the complete fusion of the two organisations. Ultimately the commission appointed a subcommittee composed of six of its members to prepare a draft statute for the International Red Cross, to be submitted to the commission at its next plenary meeting. This draft statute was prepared, and provided for the formation of a federation comprising both the national societies and the International Red Cross committee; it did not represent the unanimous opinion of the subcommittee, a counter-proposal being submitted by one of its members to the effect that all the international activities of the Red Cross should be in the hands of a single organisation, which should be a federation of the national societies, but not including the International Red Cross committee. The report of the subcommittee was placed on the agenda of the second meeting of the plenary commission, held in Paris at the end of January. At this meeting the efforts made to persuade the members unanimously to accept a compromise were unsuccessful. In these circumstances a vote was taken, the result of which was that the subcommittee's plan was adopted.

The commission will now submit to the national societies a report upon its work and the text of the draft statute adopted by a majority of its members, together with the counter-proposal and other suggestions submitted to it. Upon receipt of the remarks of the various societies in regard to these documents—which remarks should reach the secretariat of the commission before May 20th—the commission will once more meet for the preparation of its final report to the conference, with which the decision rests and which, according to a recommendation of the commission, should assemble in July next.

THE LANCET.

LONDON: SATURDAY, MARCH 1, 1924.

THE INCIDENCE OF RHEUMATIC DISEASES.[1]

A CONSIDERED study of the incidence of rheumatic diseases, founded upon records made by certain practitioners during the course of their practice among insured patients and collated by a committee of the medical staff of the Ministry of Health, has just been issued. It is the result of the first general and organised effort of insurance practitioners to undertake a group inquiry. If its importance on this ground receives less immediate recognition than it should, it will be because the matter, admirably presented, is of such absorbing interest as to exclude attention from the mechanism of its collection. The establishment of a uniform nomenclature, classification, and method of keeping records is the first requisite if any inquiry on rheumatic disease is to be kept within practical bounds, and the fact that so many groups of diseases are loosely packed together under the common label of rheumatism must have made this a formidable task. None of the existing systems of classification appeared to the committee or those who provided the records to be quite suitable, and quotations from the conflicting views on nomenclature of recognised authorities show that certain differences (such as on the need for distinction between osteo- and rheumatoid arthritis) are fundamental. Eventually, for the purpose of this inquiry, it was decided to classify into three main groups: (A) Acute rheumatism (rheumatic fever), together with subacute rheumatism; (B) non-articular manifestations of so-called "rheumatism" (muscular rheumatism, fibrositis, &c.); (C) diseases characterised by chronic joint change. These three groups were subdivided into nine categories, set out below, and the inquiry form on which observers were asked to record their findings contains also, for the less well-defined diseases, a note of the chief distinguishing signs and symptoms, so that the possibility of gross error in filling them up is practically excluded.

The inquiry had the great advantage, for statistical purposes, that the population at risk is known with reasonable accuracy, for the samples, taken from all parts of the country, may be regarded as typical anyhow of its insured population. The total number of rheumatic cases recorded was 2510 (1771 males and 739 females), which amounts to 27·6 per 1000 of the total population (approximately 91,000) under review. For every 1000 insured persons, each sex being considered separately, the incidence of diseases was approximately as follows: Group A, Rheumatic fever, M. 1, F. 2; subacute rheumatism, M. 3, F. 3. Group B, Muscular rheumatism, M. 6, F. 7; lumbago, M. 10, F. 3; sciatica or brachial neuritis, M. 3, F. 1. Group C, Rheumatoid arthritis (including infective peri-arthritis), M. 1, F. 3; osteo-arthritis, M. 3, F. 2; gout, M. 3, F. less than 0·1; unclassifiable chronic joint change, M. 1, F. less than 1. These figures must be considered in relation to the attack-rates for the various age-groups if their full significance is to be appreciated, and illustrative tables are furnished; it must be remembered that insured females have a much younger age-distribution than insured males. But the predominance of gout, and especially of lumbago, among males and the higher incidence of rheumatoid arthritis in females may well form the starting-point of further inquiries designed to throw light upon causation. The total length of sick absence attributable to rheumatic diseases amounts in males to one-sixth of the total sick absence due to all diseases, and in females to one-seventh. Joint diseases account for more than half of these enforced holidays, while it is noted that the comparatively small amount of sick absence shown as due to acute and subacute rheumatism constitutes only a fraction of the real amount of disability for which these varieties of rheumatism are ultimately responsible; for in this inquiry the sickness due to valvular disease of the heart unaccompanied during the year of record by rheumatic symptoms is not taken into account. The estimation of the financial loss involved is even more impressive than the attack-rates. If the sample of the general insured population is a fair one—and there is no reason to doubt this—it would seem that more than one-seventh of the total sick benefit, or over £1,800,000, is paid to, and 3,141,000 weeks of work are lost annually by insured workers on account of rheumatic diseases, excluding benefit paid or work lost on account of organic disease of the heart. This sum of wasted time and money, the proximate causes of which are further subdivided in the report, is in itself sufficient ground for the vigorous prosecution of research into causation and treatment urged by Sir GEORGE NEWMAN in his introduction to the report. It could not be expected that from this preliminary inquiry much of practical import in either of these directions would emerge, but even here certain indications, divided with nice precision into ascertained facts and impressions, are recognised. It is a fact, for example, that of patients with acute rheumatism nearly 50 per cent. had enlarged or septic tonsils and that only 2 per cent. had had their tonsils removed; it is an impression, derived from scrutiny of the records of the various forms of fibrositis, of the non-articular rheumatic manifestations, and of the chronic joint diseases, that dental sepsis may be a factor in ætiology.

As to future lines of research, sufficient geographical and occupational variations in the incidence of rheumatic diseases have come out of this inquiry to merit further investigation. Local variations in incidence of gout are especially noteworthy. As to preventive treatment, in the prophylaxis of valvular involvement the importance of arrangements for long rest during convalescence, so often emphasised in our columns, is brought out, and the traditional association of all varieties of rheumatism with damp houses is regarded as well founded; while the reduction in the incidence of acute rheumatism in this country and in America is attributed to the increased attention paid to tonsillar sepsis in school-children. Treatment, on the other hand—though Sir GEORGE NEWMAN believes that it is now beginning to enter upon a more hopeful phase—is admittedly unsatisfactory, especially in the chronic diseases. The establishment of arthritic hospitals or special clinics where treatment could be studied and the newer methods for the alleviation of symptoms tried out, is recommended. This recommendation will be endorsed by practitioners for two reasons. Not only would the concentration of patients suffering from rheumatic arthritis in the properly equipped institu-

[1] Reports on Public Health and Medical Subjects, No. 23, The Incidence of Rheumatic Diseases. H.M. Stationery Office. 1924. 2*s*. 6*d*.

tion have immense possibilities from the aspect of research, but such institutions would help to solve the problem of finding a place where these unfortnuate sufferers can be cared for.

There are many more points in this comprehensive survey of exceptional interest, and to these we shall have occasion to return. The report is a remarkable production and should silence for ever those who judge from the reluctance of the practitioner to fill up forms which he considers unnecessary his unwillingness to coöperate in a well-planned inquiry of limited scope.

BAYER "205."

EX AFRICA semper aliquid novi. There is something particularly stimulating in the discovery of a new drug and in the record of its success in such a particularly intractable and devastating disease as trypanosomiasis. It is therefore not unnatural that recent accounts of the therapeutic and prophylactic action of Bayer "205" in men, and to a certain extent in animals, has given rise to the hope of a brighter future for the Dark Continent. Were the great waterways of the Niger, the Congo, and the Zambesi free from this scourge, were life made possible for beasts of burden and pastures habitable for cattle, Africa might one day become the richest continent in the world. In his paper to the Royal Society of Tropical Medicine and Hygiene on Feb. 21st,[1] Prof. F. K. KLEINE gave a lucid and critical account of the action of Bayer "205" in Central Africa. Prof. KLEINE is one who believes little in speculations, but only in the results of well-planned experiments; he therefore deprecates, quite rightly, the idea that Bayer "205" is infallible for every form of trypanosomiasis. The methodical manner in which the therapeutic effects of this drug have been tested, first in animals, then in man, under his direction call for special praise even though Prof. KLEINE's scientific reputation is firmly established.

In the discussion which followed Prof. KLEINE's paper it became evident that the time for a systematic inquiry into many aspects of human trypanosomiasis has now arrived. As Prof. WARRINGTON YORKE pointed out, Great Britain, which has such large interests in Africa, has a natural responsibility to carry on the researches initiated by Prof. KLEINE on the Congo and in Northern Rhodesia; this should entail an accurate record over a number of years of the cases so far treated to ascertain the permanency of the cure. According to YORKE, the actual death-rate from human trypanosomiasis under natural conditions is unknown; there are areas in Southern Nigeria, for instance, where the trypanosome has become so attenuated as to be no longer pathogenic, while in other districts, as formerly in Uganda, the disease spreads like wildfire and causes a very high mortality. The factors which underlie these ascertained facts is unknown. The vexed question as to possibility of mechanical conveyance of trypanosomes by tsetse-flies, which YORKE and LYNDHURST DUKE believe to be possible—a view KLEINE vigorously opposes—should admit of an early solution. It may be necessary to study more minutely the life-cycle of the trypanosome in the peripheral blood, already outlined by Miss MURIEL ROBERTSON, for it is conceivable that in certain stages the organism becomes more vulnerable to the action of the drug. There is still much more to be learned about the dosage of Bayer "205," the reason of its action upon some pathogenic trypanosomes and inertness towards others—*Trypanosoma evansi*, for example—as well as of its mysterious attenuation of the virulence of *T. brucei* in cattle.

In animals repeatedly injected with Bayer "205" the trypanosomes soon develop a "fastness" towards this drug, and the same appears to take place with equal rapidity in man. In view of this fact the amount and spacing of the dosage becomes extremely important; KLEINE therefore suggests 2 g. as the initial dose given by the intravenous route and followed subsequently by three separate gramme doses at weekly intervals. Should, however, the trypanosomes return to the blood-stream in spite of this dosage they are then more susceptible to the action of some metallic drug, such as antimony tartrate or tryparsamide; the latter, according to Miss LOUISE PEARCE, of the Rockefeller Institute, has marked therapeutic properties, so that it is not improbable that by a combination or alternation of these drugs ultimate success in resistant cases may be achieved. Such an inquiry as we have suggested should envisage in its scope a comparative trial under similar conditions on an extended scale of these recent advances in the therapeutics of trypanosomiasis, and we would recommend such an investigation to the League of Nations so as to invest it with an international character. Certainly it is a subject of great economic importance; if mainly to the British Empire, it also concerns France and Belgium and, to a lesser extent, Portugal and Spain. Little information has been disclosed so far on the chemical composition or formula of "205." It is understood to be a complex organic aniline body, of which the nucleus is trypan-blue. We hope that in their own interests, as well as for the benefit of science, the manufacturers will soon be in a position to supply more detailed information on this point.

[1] See THE LANCET, Feb. 23rd, 1924, p. 384.

INSURANCE DENTAL BENEFIT.

THE position of "dental benefit" under the National Health Insurance Acts is not at present clearly understood either by the general public or by those members of approved societies who are entitled to participate in it. Dental benefit may be described as a statutory benefit, but it is not, like medical benefit, one to which every insured person is entitled. The only reference to dental treatment in the Act of 1911 is in Part II. of the Fourth Schedule, under "additional benefit," where of 14 specified benefits which might under certain circumstances become available to members of approved societies, No. 2 on the list provides for "the payment of the whole or any part of dental treatment." That any tangible gain would result from this provision was a contingency which few professional men in 1911 regarded as of any practical interest. Happily those members of the British Dental Association who saw the possibilities ahead managed by dint of perseverance to obtain in 1913 general approval by the dental profession of a scheme whereby dental treatment might be made available to the industrial classes on a uniform scale throughout the country. The scheme, in brief, provided for those persons coming under the wage-limit of the Insurance Act all the ordinary operations in dental surgery at agreed scales of fees by registered dentists grouped in voluntary panels. These panels were intended to cover the areas of counties, with subdivisions, where necessary, into district panels, and provision was also made for the formation of central committees in England, Scotland, and Ireland, which would coördinate and regulate the work of the local panels and conduct negotiations on behalf of the panels with Government departments or other bodies concerned. Although designed in anticipation of the valuation of the funds of approved societies in 1915,

the scheme was meant to be put in operation prior to that valuation and, in fact, public dental services were instituted in many parts of the country,[1] as, for example, in Bournemouth, Bristol, Brighton, Bedford, Birmingham, and Glasgow. The dentists joining the panel usually formed themselves into limited liability companies to facilitate administration. The war, unfortunately, interfered with the success of this effort—no profession having been more depleted by service with the forces than the dental profession—and in addition, the state of the law at that time permitted unregistered persons, either singly or in combination, to describe and advertise themselves as "Public Dental Services." Thus, an organisation voluntarily established by the profession, which promised to be of great benefit to the health of the community, fell largely into disuse.

The ultimate effect of the experience of the war on the attitude of the authorities and of the public generally towards dental service as an element in public health is well known. It produced first the Departmental Committee on the Dentists Act, 1878, appointed "to enquire into the extent and gravity of the evils of dental practice by persons not qualified under the Dentists Act." This Committee reported in 1919, and following upon that report the Dentists Act of 1921 was passed. When, therefore, the long-delayed valuations were at last completed, showing the existence of surplus funds in the hands of certain approved societies, dental treatment was offered by many of these societies as additional benefit to their members, and of all these benefits it has become that most in demand. In one society, for example, claims for dental treatment to the amount of £1500 per week are being passed. The number of approved societies and branches of these societies which include dental treatment among the additional benefits offered to their members is over 500, involving a membership of about 7 millions. Thus, as has been said, not all insured persons are entitled to the benefit, nor even all of the 7 millions stated, for of the members of the fortunate societies only those who have been continuously insured from a date not later than Dec. 31st, 1918, could claim the additional benefit resulting from the first valuation. The second valuation is expected to widen the possibilities, not only by the release of further surplus funds, but also by bringing into benefit those members of the societies who have qualified for benefit since the first valuation. In response to the demand thus arising, the scheme for industrial dental service already outlined was revived. The British Dental Association undertook the trouble and expense of putting it before all registered dentists by arranging meetings in all its branch areas over the country. In all these areas, 15 in number, public dental services were formed, and dental treatment at an agreed scale of fees on certain conditions was made available for the members of approved societies in every part of the country. Having organised the service, the Association by its constitution was unable to carry it on. The service was open to all registered dentists, and many of these dentists, particularly those registered by virtue of Section 3 of the Dentists Act, 1921, were not members of the Association. Therefore the Public Dental Service Association of Great Britain, Limited, was formed, of which all the local services already established became branches. This Association was registered as a limited liability company on Dec. 27th, 1922. Its registered office is in London and it controls the service through a central committee of representatives of all the branches. All registered dentists are eligible for membership. Its membership at present is over 5000 and is extending, as it is in the interests of all registered dentists who desire to participate in public work to join an association which can represent them and protect their interests when questions as to the interpretation of the conditions of service arise.

The whole question of public dental service is at present in an interesting stage. Dental treatment for members of approved societies—chiefly at present given as additional benefit—does not seem to fall under the description as "of the nature of medical benefit" and therefore does not come under the control of the insurance committees, but is administered by the approved societies concerned, subject to approval by the Insurance Department of the Ministry of Health of schemes drawn up by the societies. Questions as to conditions of service and remuneration had, therefore, in the circumstances, to be settled directly between the dentists and the approved societies, and there is at present in existence a joint committee of representatives of dentists and of approved societies for this purpose. The present arrangements must be regarded as temporary and in a measure experimental. The benefit of dental treatment is only reaching a comparatively small number of the persons requiring it, while, notwithstanding the publicity given to the matter, very many of those entitled to the benefit are ignorant of its existence or of the means of claiming it. Dr. H. S. Beadles has forcibly pointed out (see p. 475) how unfairly this uneven distribution of benefits works out in practice; territorial administration alone could give the desired relief. With dental benefit as it exists at present some beneficial results are apparent in a lessening of claims for sickness benefit in those ailments which can be most certainly associated with dental defects. It is certain that the methods by which the treatment is given are susceptible of great improvement, and would require serious modification in any scheme of permanent dental benefit which may be contemplated in the future. Above all, it is desirable that conservative and preventive treatment should be encouraged. Nothing could be more disastrous to the interests of public health than to dignify with the name of "benefit," and to encourage and perpetuate by the expenditure of public funds, the extraction of teeth and the insertion of artificial dentures which has been the chief dental treatment sought by the industrial classes hitherto. It is to be presumed that if and when that permanent dental benefit be instituted, as it seems destined to be, the methods applicable to medical benefit will be found applicable to the benefit given by the allied profession of dentistry. Presumably the promised Royal Commission on the National Health Insurance Acts will have this matter under consideration and the experience of the present service will be utilised by all parties concerned and not least by the dentists in suggesting methods for rendering available to the industrial classes in the future such a dental service as shall produce lasting and beneficial effect on the health of the community.

[1] See THE LANCET, 1917, i., 505.

MEDICINE AND THE EMPIRE EXHIBITION.

IN connexion with the British Empire Exhibition a committee of medical men has been formed with the object of welcoming their colleagues from the Dominions and Colonies visiting the metropolis. The Committee comprises the President of the Royal College of Physicians of London, the Vice-Chancellor of the University of London, and the Presidents of the Royal Society of Medicine, of the Medical Society of London, and of the various metropolitan medical societies. One of the first duties of this Committee will be to form an executive body and undertake the organisation of hospitality to be extended to medical practitioners from overseas. For this purpose it is desired to ascertain beforehand, as far as possible, the names of the intending visitors and the periods of their visits, and it is requested that intending visitors will communicate without delay to the hon. secretaries of the Hospitality Committee, Mr. Mortimer Woolf and Mr. E. T. C. Milligan, at 1, Wimpole-street, London, W. 1. A preliminary meeting of the Committee has been held, and the personnel will be duly announced. The Royal Society of Medicine, acting in coujunction with this Committee, will welcome all duly accredited members of the medical profession during their stay in the home country.

Annotations.

"Ne quid nimis."

AN INVESTIGATION OF CHILD LIFE.[1]

THE effect of maternal social conditions and of nutrition upon the weight and stature of the infant has been made the subject of an interesting and careful report to the Medical Research Council by Miss Bruce Murray. The general answer to the question generally proposed by the subject of the report is in the negative—the effect is small; but the findings are of high scientific value because the nature of the research and the material for investigation were both carefully defined. Only selected mothers and only certain infants were taken into consideration, and it is obvious that if the symbiosis thus arrived at displays little of the sad phenomena associated with the bad development of infancy that we see around us, it is because in the process of selecting the material the sinister factors have been eliminated. We are thus definitely assisted as to directions where remedies can be supplied.

Miss Bruce Murray, an Associate of the Institute of Hospital Almoners, has thoroughly investigated the records available at St. Thomas's Hospital and the General Lying-in Hospital, Lambeth, where notes have been kept of the social as well as the medical aspects of all the cases admitted for the last nine consecutive years, covering therefore pre-war, war, and post-war conditions. On the medical side full details were available concerning mother and child in the case-statements, including accurate records of measurements, while in the lady almoner's departments was found the information needed for correlation of the wages and social conditions of the family. These departments could place before the investigator case-papers showing every point in each patient's social circumstances throughout the last months of pregnancy and for some considerable time after confinement. Miss Murray, having digested the records, made house-to-house visits to many of the families, and then selected her material, so that the terms of reference in her report should be clear-cut. To avoid confusing the issue by such influences as size of the family or place of the infant in the family, only primiparæ are dealt with, and in this way the part played by maternal fatigue is omitted. All cases where maternal illness might affect the child, such as renal and cardiac disease, and, of course, syphilis and phthisis, have been excluded, as well as cases attended by the difficulties or abnormalities of labour complicated by eclampsia or ante-partum hæmorrhage. In this way a coördination of records has been possible which should definitely point to the effect which varying social and financial conditions have on birth-weight and birth-length. The classification of cases was then made, not according to social class, standard of living, total resources, or amount of rent paid, but the position of each case was decided by its expenditure, an average of net incomes being struck, when the cases were arranged in two classes above or below this average. The factors popularly supposed to affect birth-weight and birth-length were then found to exercise little influence. All mothers suffering from serious illness being excluded, it was seen that neither age nor stature in the mother played any determining part, while investigation of the season of birth pointed, though not definitely, to March as being a bad month of arrival. Comparison with material investigated at maternity homes presented difficulties, as, for example, the average age of the mothers was higher here than in the hospitals, nor was it possible to be certain that only infants would be included whose mothers were within the selected class of health. The general conclusion is arrived at that poverty, lack of proper nourishment, and generally unfavourable social circumstances during pregnancy do not produce the commonly accepted differences in the offsprings. As regards the hospital cases the averages for the war years showed no significant falling off in weight, though the average net income during two of those years was particularly low.

What is the positive finding of this interesting report? It is, as Dr. J. S. Fairbairn points out in his preface, quoting words also quoted by Miss Bruce Murray—"The fœtus lives like a true parasite, regardless of the expense to the mother." The whole document is a demand for the care of the parturient.

[1] The Effect of Maternal Social Conditions and Nutrition upon Birth-Weight and Birth-Length. A Report to the Medical Research Council. By M. Bruce Murray. London: H.M. Stationery Office. 1924. 1s.

THE LEPTOSPIRA ICTERO-HÆMORRHAGIÆ IN RATS.

THE recent epidemic of spirochætal jaundice occurring among miners in East Lothian has been the subject of investigation by the Scottish Board of Health, with the result that the disease is now locally notifiable. The question of the disease falling under the Workmen's Compensation Act was brought up in the House of Commons this week, but at present sufficient data as to its ætiology are not available to justify its inclusion under the terms of the Act. Epidemic infectious jaundice, an acute non-contagious disease characterised by fever, jaundice, hæmorrhages, and nephritis, occurring in epidemics or in localised groups, was first fully described by Weil in 1886, and in 1914 Inada and Ito discovered the causal organism to be *Leptospira* (=*Spirochæta*) *ictero-hæmorrhagiæ* This virus, according to Noguchi,[1] is a very minute organism, capable of passing through Berkefeld filters. Outside the human body it was first found to exist as a harmless parasite in the kidneys of field-mice by Miayima, and shortly afterwards, in 1916, Ido, Oki, Ito, and others discovered its presence in the rat, and their researches showed that the rat was responsible for human infection. The spirochæte is excreted in the rat's urine, and it is conceivable therefore that infection occurs as the result of exposure of the human being to soil on which the urine of these animals has been freshly deposited, or through the ingestion of food which has been left unprotected from such sources of infection. Animal experiments have shown that the organism is capable of penetrating the intact skin as well as the mucous membranes of the alimentary tract.[2]

In its geographical distribution the disease occurs in its most severe form in Japan, where it has been most widely investigated, but it occurs also in Central Europe, Southern France and Spain, and in the United States. In the recent war it made its appearance among the troops in the trenches on the various fronts; in October, 1916, Drs. L. Martin and A. Petit published an interesting note in the *Bulletin de l'Académie de Médecine* on the existence of the disease in the French Army, and in 1917 Drs. A. Stokes and J. A. Ryle contributed a full account of the infection in the British Army in Flanders to THE LANCET.[3] A case occurring in London was fully investigated and reported by Dr. P. Manson-Bahr[4] in 1922. Investigations carried out in all areas where the disease has manifested itself have established the common rat, *Mus decumanus*, as the chief carrier of infection. In the East Lothian outbreak live wild rats were obtained from the centre of infection, two from one of the coal-mines, and one from the surface at about a quarter of a mile from the pits, and examined by Dr. G. Buchanan.[5] Motile and characteristic leptospiral forms were found by dark-ground examination in emulsions made from the kidneys of the surface rat and one of the pit rats. No spirochætes were found in other organs, the urine,

[1] The Practice of Medicine in the Tropics, 1922. Byam and Archibald. Vol. ii., p. 1215.
[2] Noguchi: Ibid.
[3] THE LANCET, 1917, i., 142.
[4] Ibid., 1922, ii., 1056.
[5] Brit. Med. Jour., Feb. 23rd, 1924, 314.

or the blood. The blood was infected by *Trypanosoma lewisi*. The rats were well nourished and showed no sign of disease.

It is of interest to compare these results with the recent investigations of Profs. W. Schuffner and W. A. Kuenen into the condition of rats in Holland.[6] They examined, by dark-ground illumination, the kidney scrapings of a large number of rats in Amsterdam. Out of a total of 209 of the species *Mus decumanus*, 27 per cent. were found to be infected; of 29 of the species *Mus rattus*, only one contained the organism. They concluded that in comparison with other towns the percentage of infected rats in Amsterdam was fairly high, about equal to that of London (Stevenson). They also examined for *Trypanosoma lewisi* and found that 14 per cent. of the *Mus decumanus* and 7 per cent. of the *Mus rattus* were infected. In the case of old rats, the spirochætes were found in a much greater proportion of cases than among young rats (45 per cent. against 2·5 per cent.); the relative incidence of trypanosomes was 11 per cent. against 16 per cent. in young rats. Like Stevenson, they found the spirochætes in the kidney collected in foci, not in the kidney-substance but in the tubes. In the case of the rat the investigators hold that the infection gradually increases in virulence. Cases of Weil's disease in Holland are rare and the high infection percentage among rats came as a surprise to the investigators.

SECONDARY INFECTIONS IN PULMONARY TUBERCULOSIS.

Prof. Paul Courmont and Dr. Boissel,[7] of Lyons, state that until recently it was generally held that the tuberculous lung was almost always invaded at a certain stage of the disease by other organisms than the tubercle bacillus, and particularly by pyogenic germs. A considerable proportion of the patients' symptoms were attributed to secondary infection, especially the hectic fever and the aggravation of the general condition. The therapeutical consequences of this view were that mixed vaccines consisting of the principal pyogenic organisms were systematically employed in all cases of active pulmonary tuberculosis with frequently disastrous results. In opposition to this theory of the frequency of secondary infection Besançon and Biros, at the Strasbourg Congress in 1922, maintained that the tubercle bacillus played a predominant part throughout the course of pulmonary tuberculosis, and that the rôle of secondary invaders was reduced to a few cases of pneumococcal infection or insignificant bronchitis. The present writers carried out investigations on 188 patients presenting all varieties of pulmonary tuberculosis, and found that while secondary infections were much less frequent than was formerly supposed, they were present in a considerable proportion—viz., 20 per cent.—while in the remaining 80 per cent. the tubercle bacillus was sufficient to produce every form of anatomical lesion in the lungs and all the clinical varieties of the disease, including hectic fever. The secondary infections were divided into two groups. In the first group, which consisted of 13 cases, the infection was polymicrobial, there being a collection in more or less variable quantity of different organisms, such as streptococci, pneumococci, *B. coli*, and diphtheroid organisms. Cases of this kind were almost always very severe, with pulmonary cavities, and it was difficult to say whether these secondary infections merely represented the last stage of the disease, or whether they played a part in the evolution of the lesions. In the second group, which consisted of 23 cases, the associated infection was due to a single micro-organism, such as the pneumococcus (2 cases, 1 death), pneumobacillus (2 cases), enterococcus (1 case), streptococcus (3 cases, 1 death), tetragenus (2 cases, both fatal), *B. cutis commune* (4 cases, all fatal), catarrhalis (1 case, fatal), Pfeiffer's bacillus (5 cases, 1 death), and various cocci (3 cases). In the second group the secondary invaders appear to have played an important part. The prognosis indeed in many cases seemed to depend on the nature of the associated micro-organism. While the pneumobacillus and Pfeiffer's bacillus proved to be of little danger, the streptococcus, enterococcus, and tetragenus were found in the severe and rapidly fatal cases. A Paris thesis to which attention was drawn recently sets out the sinister relation of tetragenus to fatal tuberculosis. The practical outcome of the Lyons studies is that if vaccine treatment is to be employed in pulmonary tuberculosis it should be specific. In most cases vaccine treatment by other organisms than the tubercle bacillus is not required, but in cases of secondary infection vaccine-therapy should be tried, and is all the more likely to be successful when the tuberculous lesions are not severe or extensive.

[6] Nederl. Tidschrift voor Geneeskunde, 1923, ii., 2018.
[7] Paris Médical, Jan. 5th, 1924.

THE FUNCTIONAL CAPACITY OF THE LIVER.

WHILE the efforts of clinicians are continually directed towards the study of the functional capacity of diseased organs, the study of the hepatic functions has been somewhat neglected, although it is far more interesting and necessary than the mere physical condition of the liver. This state of things may be imputed to the fact that the results obtained have been at variance, often unexplainable and useless from a clinical point of view. Prof. Giuseppe Sabatini,[1] of the Institute of Clinical Medicine in the University of Rome, has published the results of his own investigations which seem to us to shed some light on the subject.

Prof. Sabatini recognises that the liver has not one, but five functions, the biligenetic, glycogenetic, ureopoietic, antitoxic, and proteopexic: he investigated them all by the usual well-known laboratory methods in 12 cases of hepatic disease, including diabetes mellitus, various forms of cirrhosis, jaundice, and gall-stones. In none of the cases were all the five functions affected simultaneously, nor was it possible to say whether in definite diseases there corresponded definite types of functional insufficiency either singly or gathered into special groups. In the case of cirrhosis this question could be with certainty answered in the negative, while the cases of diabetes showed an almost identical behaviour of the various functions. On the other hand, there was a profound and extensive disturbance of the hepatic functions in calculous cholecystitis. It must therefore be admitted that in this disease, apparently localised but which may cause grave disturbance of the general health, certain conditions come into play which seriously impair the action of the liver, perhaps through reflex nervous stimuli, and perhaps also through slight general infection. Investigations on a far larger scale and perseveringly carried out in this disease may help to solve this problem. The biliary function was always found altered in these patients to a slight extent, but in the diabetics it was normal, the glycogenic function was altered in some cases, normal in others—for example, in three out of four cases of cirrhosis it was found to be normal. The ureopoietic function gave results in accord with pathological conceptions; it was altered in three cases of true atrophic cirrhosis, and normal in a case of cardiac cirrhosis. In the diabetics there was invariably a disturbance of this function, probably in relation with altered metabolism not only of carbohydrates, but also of proteids. It is not improbable, however, that this function is altered in diabetics because there is in these patients a greater production of ammonia (a defence against acidosis) which necessarily changes the value of the coefficient of ureogenetic inadequacy. The proteopexic function, judged by the digestive hæmoclasis of Widal, did not give any definite or serviceable results, the hæmoclasis being sometimes positive and sometimes negative without reasonable

[1] Il Policlinico, Practical Section, xxxi., Jan. 14th, 1924.

explanation. The antitoxic function, at least in the form of Roger's induced glycuronuria showed a variable behaviour of no clinical value or particular interest for diagnosis.

The conclusion which may be derived from these interesting researches is that if it has hitherto been admitted that there is a parallelism of all the functions of the liver and a complete association between them, this view will have to be modified. Even assuming, according to the general laws of physiology, the harmony of the various hepatic functions, we have now evidence to show that this association is correct only within physiological limits. Under the action of different morbid conditions, the various functions, which perhaps have different anatomical sites in the complex and obscure architecture of the organ, do not all suffer simultaneously nor in an equal degree. So that we always find in functional exploration of the liver one or several functions more or less profoundly altered side by side with others which are absolutely normal and intact. Prof. Sabatini pleads for further studies of the many hepatic functions in order to arrive at an estimation of the functional efficiency of the organ by the adoption of definite and identical methods, so that results may be obtained which leave no gaps and are intelligible and comparable and lead to the determination of constant relationship between types of hepatic lesions and types of functional efficiency.

FUNDAMENTALS OF THE CANCER PROBLEM.

AT this stage of the cancer problem a critical selection from the enormous mass of material now collected, presented mainly in pictorial form, cannot fail to be of interest to students and practitioners. It is therefore not surprising that the Governors' Hall at St. Thomas's Hospital was filled with an audience of nearly 400 people on the occasion of the first of the four lectures on cancer being delivered under the auspices of the University of London by Dr. J. A. Murray. This lecture was a survey of the main features common to malignant growths, preliminary to the discussion of experimental and other research work in subsequent lectures. Dr. Murray's main conception of cancer is that of an aberration of the process of repair. Whether cancer arises in the covering epithelium of any portion of the body, whether it arises in the subcutaneous tissues, or from linings of the blood vessels, the same process is at work, the differences in the histology of the growth being due to differences in the tissues of origin. Dr. Murray showed lantern slides of primary and secondary growths in man and other mammals, and also in amphibians and fish, and of histological preparations demonstrating characteristic features of malignant growths. In a carcinoma which has developed from a glandular tissue the glandular structure is sometimes entirely lost, and a solid mass of cells results, but this differentiation can be reversed under suitable experimental conditions. Such a growth can be made to grow in a solid mass or made to return to glandular structure without having altered its characteristics as a growth. The superficial similarity between the histology of a carcinoma of the skin and of the development of an embryo has given rise to many of the now untenable hypotheses of the nature of carcinoma. In the early stages of malignant growths several foci of independent growth are to be found, and many growths have arisen by the coalescence of these foci; but it is interesting to note that this coalescence does not take place by the transformation of the intervening portions into cancer. It is on the interpretation of pictures as active processes—not as a final stage—that the diagnosis and interpretation of the histology of malignant new growths must rest. If cancer remained localised tissue there would be no necessity for the elaborate amount of investigation and study which we apply to it; very simple remedies would be sufficient, such as its removal when it became troublesome or dangerous. But it is the capacity for passing beyond the original site in the body and disseminating to the distant parts which makes cancer so serious a disease. Dr. Murray proceeded to discuss the occurrence and distribution of cancer. Here individual experience, he said, is of very little value. The experience of communities is required. Of all the causes of death, cancer is responsible for one-tenth or one-twelfth of the general mortality. Recoveries from cancer are practically negligible from the point of view of statistics in this country. The age-incidence of cancer, both in man and animals, is suggestive, for as we go up in years we find that the proportion of those dying from cancer, to the total of people living, rises swiftly. Comparison of the incidence and mortality of cancer in different countries is not easy. The difficulty is that we have no good grounds for believing that a number of cases of cancer recorded in any country represents truly the number of deaths in that country from cancer. There may be more deaths or fewer. There is no means of knowing what other diseases were termed cancer, or whether cancer was always diagnosed, and thus we have to read international statistics with a certain reservation. The significance of the apparent increase of cancer found in this and other countries is very difficult to interpret. It is extraordinary that the increase is not in those regions of the body—for example, cancer of the uterus—where the disease is commonest. Again, while females of 75 and upwards during the period 1851–1909 show progressive and rapid increase in the proportion of deaths due to cancer, in women of 35–45 the increase has been much less. Dr. Murray considers that we are justified in taking comfort from this observation by deducing that the factors which can produce cancer are apparently taking longer to produce it now than in the past. If the increase of cancer is significant at all, not merely due to improvement in diagnosis or the like, then it takes longer for the disease to develop than 40 years ago. That is one of the most hopeful features of otherwise ominous figures.

EPIDEMIC DROPSY IN CALCUTTA.

RECENTLY Calcutta has experienced an outbreak of epidemic dropsy, which has been the substance of an inquiry by the workers at the Calcutta School of Tropical Medicine, under Lieut.-Colonel J. W. Megaw and the staff of the Health Office, Calcutta. As a result of careful investigations, the ingestion of injured rice has been suspected as an ætiological factor in the outbreak. The disease first appeared among the women students of a medical school, who made their own messing arrangements. It was found that their rice supply came from a small dealer in a different locality. An interesting fact was discovered—namely, that the family of the dealer was suffering from generalised œdema, and that a number of people in the neighbourhood who obtained their rice from the same source were also affected. About 75 cases in all were detected. Colonel Megaw reports that all the effects which were observed went to show that the disease originated from the consumption of rice, and it was quite possible that one consignment of rice might have been responsible for all the cases. There have been many different views as to the nature and cause of epidemic dropsy.[1] In 1914, Lieut.-Colonel E. D. W. Greig, I.M.S., classified epidemic dropsy as one of the deficiency diseases, similar to beri-beri. It has also been regarded as an infectious malady, and in support of this view Dr. Bepin Brahmachari, I.M.S., has published a paper in a recent issue of the *Calcutta Medical Journal*.[2] Again, it has been widely held in Calcutta that a poison contained in an adulterated mustard oil is responsible for the condition, but no evidence of the presence of any poison has been obtained on scientific investigation. The opinion which now holds the field on the ætiology of epidemic dropsy is that rice which has been damaged by improper storage develops a mould which, when

[1] THE LANCET, 1920, ii., 1234.
[2] Calcutta Medical Journal, December, 1923, p. 519.

taken, acts as an intestinal irritant, and so affects the sympathetic nervous system. This view has been, in essentials, held by Colonel Megaw ever since the Calcutta outbreak of 1909, but conclusive proof has not yet been established. There are apparently great practical difficulties in the way of subjecting samples of suspected rice to exact experiment. In combating the present outbreak the Director of the School of Tropical Medicine recommends that rice should be cut out of the diet the moment symptoms of dropsy appear. In this way, it is believed, the course of the disease will always be arrested.

INSPECTORSHIPS UNDER THE BOARD OF CONTROL.

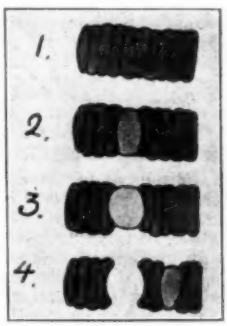
WE have before now commented upon the range—broad yet delicate—of duties carried out by the inspectors under the Board of Control (Lunacy and Mental Deficiency), and welcome the advertisement of the Board inviting applications for two more inspectors; but the terms of the advertisement, which will be found in our columns last week, have led to a representation being made to us upon two points. The words of the advertisement are :—

> The salary will be—
> (*a*) £500, rising by annual increments of £20 to £800 for men—and for women possessing a Medical qualification ;
> (*b*) £400, rising by annual increments of £20 to £650 for women.
>
> Bonus, which varies with the cost of living, is also allowed. Present bonus on salaries of £500 and £400 is £184 and £158 1*s.* respectively.
>
> The duties will include the Visitation and Inspection of Institutions, and candidates should possess a competent knowledge of the methods of Teaching, Training, and Managing Mental Defectives. A Medical qualification though not essential would be of value.

It has been pointed out to us that a differentiation in salary has been made between the sexes, and we agree that such differentiation in respect of public appointments in the medical world has now been generally condemned; but the second point, to which more attention was drawn, is that it would appear that, for the male candidate for the post, a medical qualification, though regarded as an asset, is not to be an essential. The layman who, whatever his experience, will not have undergone a standardised course terminating in testimonials to the attainment of the standard, will be on the same footing as a candidate who has completed five or six years of intensive study. It will be agreed that many of the duties falling under visitation and inspection of institutions can be discharged by laymen, but it will not be obvious how a candidate is to prove experience in the management of mental defectives if he has had no special training in the phenomena of mental disease. The posts do not appear to us to carry a salary that will be attractive to medical men with special claims over and above a general medical training, which would seem to us to furnish a further reason for not minimising the scientific status to which they rightly attach importance.

A RE-DISCOVERED BLOOD CORPUSCLE.

Dr. Robin Fahraeus, whose work on the rate of sedimentation of the erythrocytes has given us a most valuable test of disordered metabolism, publishes in *Acta Medica Scandinavica* (1924, l., 12) an account of a blood corpuscle which modern works on the blood appear to ignore. This corpuscle seems to be a red corpuscle which has undergone hæmolysis, and, curiously enough, it is to be seen in every fresh preparation of blood, or, to be more accurate, its position is to be seen, for the corpuscle itself, having the same refractive index as the plasma, is invisible in this medium. In a strongly aggregating specimen of blood an isolated rouleau may be seen with a gap of quite the same appearance as the surrounding plasma. Yet the rouleau behaves mechanically as a coherent string, swaying to and fro with the currents in the preparation. The two corpuscles bounding this gap are curved inwards, although the last corpuscles at the two ends of the rouleau are convex outwards, owing to the surface-tension. The two concavities bordering the interval outline a sphere with a radius of about 3μ. These colourless corpuscles are more easily found in strongly aggregating blood than in blood of normal rouleau formation, and the obvious fact that they aggregate with the red corpuscles makes it probable that they are spherical "red" corpuscles without hæmoglobin. Similar bodies may be created by the artificial hæmolysis of the red corpuscles, a fresh preparation of blood being subjected to the heat of a strong source of light such as an electric arc lamp. Under these conditions a red corpuscle begins to change its appearance in the middle of a rouleau, swelling and becoming transformed from a disc into a sphere, turning more and more pale. This process is indicated in the accompanying diagram. When the corpuscle has become spherical there is only a trace of faint yellow left, and this fades away soon. In the case of the colourless corpuscle seen in an ordinary blood preparation it is not clear whether it represents an intravital process or not. Dr. Fahraeus favours the former view for various reasons, and he believes that this corpuscle represents the final stage in the life-history of the erythrocyte, of which we have hitherto been in ignorance. Though this corpuscle does not figure in modern works on the blood cells, it was long ago described by Dr. Richard Norris, professor of physiology at Birmingham, and the father of microphotography in hæmatology—a process he introduced in 1877. From a study of his photographs of fresh blood preparations he discovered a formed, colourless element of the same size as that of a red corpuscle. Almost at the same time Bizzozero published his classical discovery of the blood-platelets, and Norris at first thought that the two structures were identical. In his principal work, published in 1882, Norris described his corpuscles as the nuclei of the lymph cells which had lost their protoplasm and represented early stages of the red corpuscles into which the colourless discs were transformed by the absorption of red pigment. It will thus be seen that, though Dr. Fahraeus makes no priority claim to the discovery of this corpuscle, his opinion of its past, present, and future characteristics is very different from that of its original discoverer.



DIATHERMY IN ANTERIOR POLIOMYELITIS.

OF late years much stress has been laid on the importance of the relaxation and the prevention of stretching of paralysed muscles in cases of anterior poliomyelitis. And no doubt, rightly laid, although attention has thereby been diverted from the use of physical agents, other than massage, in the after treatment of this malady. The older forms of electrical treatment—viz., by the faradic and galvanic currents—are still sometimes applied, but they are prescribed solely for the purpose of causing the paralysed muscles to contract and undergo artificial exercise. Recently, Prof. H. Bordier, of Lyons, has remarked on the value of diathermy in infantile paralysis. It is well known that recovery from paralysis is greatly retarded by cold; the heat generated by the diathermy current in its passage through the tissues is retained longer than the heat conducted to or radiated to the tissues from external sources. Heat from external sources does not cause a rise of temperature beneath the skin, whereas that produced by diathermy is actually generated within the tissues traversed by the current, both superficial and deep. Bordier states that the cold paralysed

limbs retain the heat produced in them by diathermy for long periods, amounting to 24 hours or more. He recommends the use of diathermy as a valuable aid in the treatment of the paralysed muscles in anterior poliomyelitis. In a lecture on this subject, delivered last week at the Hospital for Sick Children, Great Ormond-street, Dr. C. B. Heald gave particulars of four cases which improved considerably after the replacement by diathermy of other forms of physical treatment. The improvement was particularly evident in the condition of the limbs, the warmth being retained during the intervals between the applications of diathermy, while the power of voluntary movement was regained. Dr. Heald stated that he applied diathermy not only to the limbs, but also to the spinal cord in the region of the lesion, pointing out that this application to the spinal cord probably causes an increase of blood-supply to the site of the lesion. He quoted the statement of Ruhrah that the virus of poliomyelitis is destroyed by exposure for half an hour to 45° to 50° C., and suggested that the heat produced by diathermy in the spinal cord might lessen the toxicity of the virus.

THE SALARY OF THE ASSISTANT TUBERCULOSIS OFFICER.

WE have received some letters pointing out that the administrative county of East Suffolk, in an advertisement which appeared in our columns last week, does not offer to intending applicants the minimum salary according to the adopted scale. The wording of the advertisement was not clear to us, and we regret its insertion, but the letter warning us of its nature was not received until two days after we had gone to press. One of our correspondents reproaches us, also, in the matter of an advertisement for a temporary post of the same nature, but that advertisement was not accepted until we had ascertained that there was neither official nor local objection to its insertion.

THE ROYAL SOCIETY.

AMONG the 15 candidates selected by the Council of the Royal Society for election this year are Mr. Joseph Edwin Barnard, Dr. Mervyn Henry Gordon, and Prof. Charles Spearman. Mr. Barnard is honorary director of the Department of Applied Optics at the National Institute of Medical Research, and lecturer on microscopy at King's College, University of London. Dr. Gordon is consulting bacteriologist at St. Bartholomew's Hospital, and his name is particularly associated with the classification of different types of the streptococcus and the meningococcus, and with the investigation of filtrable viruses, particularly in relation to influenza. Prof. Spearman is Grote Professor of Mind and Logic in the University of London (University College), having previously been Reader in Experimental Psychology.

DONATIONS AND BEQUESTS.—By the will of the late Miss Matilda L. Putt, of Streatham, the testatrix left among other bequests £1000 each to the National Hospital for the Paralysed and Epileptic, Bloomsbury, and the British Home for Incurables, Streatham Common, S.W.; £500 each to the Torbay Hospital, Torquay, for the maintenance of the Bramford Speke Bed already given by her, the South Devon and East Cornwall Hospital, Plymouth, the Seamen's Hospital, Greenwich, Dr. Barnardo's Homes, and the Royal Society for the Prevention of Cruelty to Animals. The testatrix stated that in the event of any of the above hospitals, by reason of any Parliamentary legislation or other causes, ceasing to be supported by voluntary contributions, and managed by the State, or supported by the rates or grants from the State, the legacies to such institutions are to be void.—Among bequests left by the late Mr. John Greaves, of Manchester, are: £1000 to the Manchester Royal Infirmary; £250 to St. Mary's Hospital; £150 to the Hulme Infirmary; £500 each to the Manchester Children's Hospital and Dispensary, Pendleton and Henshaw's Blind Asylum; £200 each to the Manchester and Salford Blind Aid Society and the Salford Royal Hospital.—The Chelsea Hospital for Women has received a grant of £400 from the trustees of the Zunz Bequest towards the maintenance of its Annie Zunz Wards.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LX.—THE TREATMENT OF NEPHRITIS.

II.—ACUTE AND CHRONIC FORMS.

IN the light of the considerations advanced last week it is obvious that the general treatment of nephritis must depend largely on the nature of the case. In acute nephritis, treatment may to a large extent be guided by the severity of the condition, but in all subacute or chronic lesions the exact procedure to be adopted depends largely on the state of the renal function as revealed by the clinical condition and by renal tests. In all cases it goes without saying that every possible source of local infection should be explored, for a severe renal lesion may be the result of such conditions as chronic tonsilitis or a septic tooth. The general principles underlying the treatment of acute nephritis are as follows.

Acute Nephritis.

(1) Keep the patient absolutely at rest in bed; see that he is warm and suitably clothed, preferably with flannel next the skin. During examination by the doctor, great care should be taken to prevent undue exposure and chilling of the body. Give 2 gr. of calomel followed by a saline purge.

(2) Give a moderate amount of fluid, but no attempt should be made to give large amounts of fluid with a view to washing out toxins. For the first day or two, one pint *per diem* of fluid should not be exceeded if possible. The nature of the fluid does not matter much, and home-made lemonade, barley water, or very weak tea is suitable. If thirst is an important feature rather more fluid must be allowed.

(3) During the early acute stage the patient must be dieted just like any other case acutely ill. At first, it is best to give milk diluted one-third with soda-water, barley-water, or lime-water, but very soon bread and butter, Benger's food, and other starchy materials may be given. The nature and amount of food allowed must depend largely on the state of the patient's stomach and on the intensity of the symptoms. When the more acute condition has passed over the diet should be increased, and should consist largely of such articles as potatoes, rice, tapioca, bread and butter, custard, sweets, and cream. As improvement goes on fish should be added, soon to be followed by chicken and other meat proteins. In favourable cases a patient should be able to return to a more or less normal diet in about six to eight weeks. The addition of protein to the diet may be regulated by estimations of the blood-urea; as the blood-urea decreases towards the normal level the proteins may be increased.

(4) If œdema is severe, and the amount of urine passed continues to be very small, the condition may be helped by the use of such purgatives as pulv. jalap co., or, in young people, cascara sagrada or pulv. glycyrrhizæ co. Local pain may often be relieved by hot fomentations and poultices, or by these combined with cupping. Sweating may be induced by a hot-air bath or hot packs, or, if the patient is strong enough, by a hot-water bath. These baths should not last more than 20 minutes, as there is frequently some danger of cardiac collapse. During the process the pulse should be carefully watched; if faintness or collapse comes on the procedure must be stopped. If the œdema is intense, and the usual methods fail to relieve the condition, the administration of pilocarpine (1/10 to 1/6 gr.) is sometimes advocated, but its use is not devoid of danger, and it should only be employed under exceptional circumstances. Occasionally its use may set up œdema of the lungs, a most dangerous complication which may sometimes yields to the injection of 1/100 gr. of atropine. Hot air and other baths, though frequently

employed, are not often necessary, and it is doubtful to what extent they relieve the condition, but they often seem to make the patient feel more comfortable. If necessary, fluid must be removed from the limbs by the use of Southey's tubes, or from the body cavities by tapping. Southey's tubes should not be used except as a last resort, for they may give rise to sores which become infected and are difficult to heal. In extreme cases, decapsulation of the kidney has been resorted to; its value is very doubtful, though in a few cases dramatic results have been claimed. It is a procedure that cannot be recommended in acute renal lesions. Vomiting may be fairly severe in acute nephritis, and seems frequently to be largely dependent on the œdema and ascites. When this clears up the vomiting generally disappears. It is best treated by giving as little fluid as possible with the food, or, if very severe, by giving no food at all by mouth for a day or two. The usual alkaline remedies, especially when combined with small doses of hydrocyanic acid, are often very efficacious, and sometimes great relief is obtained by tapping the abdominal cavity and thus relieving the pressure of the fluid on the viscera. Drop doses of weak iodine tincture or of liquid carbolic acid given in water are occasionally useful. When vomiting is due to retained toxins it disappears when the kidneys regain their excreting power.

(5) Sometimes acute nephritis, especially when associated with marked œdema, gives rise to convulsions and a so-called uræmic state. Here the best treatment is the removal of 15 to 20 oz. of blood by venesection. Convulsions in acute nephritis generally cease as the result of this procedure, and the patient usually does quite well. Blood-letting is of much more value in acute nephritis than in the chronic condition, and probably might be more frequently practised than it is at present with benefit to the patient.

Chronic Nephritis.

The treatment of subacute or chronic nephritis resolves itself almost wholly into considerations of general régime and suitable diet. Complicated and puzzling as chronic nephritis may be from the clinical standpoint, modern research has shown that there are two quite distinct types of the disease, and that these two types can frequently be differentiated by renal tests.

The Hydræmic Type.—In one type the characteristic and prominent symptom is *œdema*; there is frequently a difficulty in excreting water and salt, but no difficulty whatever in excreting nitrogenous waste products. This hydræmic type is always associated with the presence of a very large amount of protein in the urine.

The Azotæmic Type.—In the other variety of renal disease there is frequently no hindrance to the passage of water and sodium chloride, but a distinct failure to excrete nitrogenous waste products. The urine in this azotæmic type frequently contains but a very small amount of protein; unlike the hydræmic variety, it shows a marked tendency to be accompanied by cardio-vascular complications, and sooner or later, if the patient survives, uræmic manifestations set in.

Before deciding on the line of treatment to be adopted in these different lesions it is essential to ascertain what the nature of the condition present in any patient really is. This information, as I have more fully explained elsewhere,[1] is best obtained by the use of modern renal tests. If a patient suffering from extreme renal œdema shows a favourable blood-urea concentration, and gives good results with the other tests, there can be no doubt that the best treatment is to put the patient on a good diet composed largely of protein. Often this increased diet may, with advantage, be combined with 10 to 15 g. of urea given by mouth twice daily. This dose may be kept up for a week, when it should be left off for a few days, to be continued at intervals for other short periods if necessary. It is wonderful how rapidly the œdema sometimes disappears with such treatment; in other cases one must admit that the results are disappointing, but when this is the case it will generally be found that the patient is not suffering from a pure hydræmic condition, but shows evidence of azotæmic or interstitial disease as well.

In hydræmic cases not very much can be done by means of hot air and other hot baths. In this type of case they are frequently dangerous, and cardiac failure, in my experience, is by no means a rare accident. They should never be used if there is any suspicion of cardiac weakness.

The diet in chronic interstitial nephritis must be guided by the extent of the lesion and by the state of the renal function. When the case is a very advanced one, the usual low protein diet is probably best, but in many patients experience shows that the present custom of prescribing a very low diet often does harm. In such patients a marked improvement in general health can frequently be brought about in a few weeks by allowing a good diet containing a fair amount of protein. No doubt the tendency to anæmia, so marked in many cases of renal disease, is frequently due to an insufficient diet, and probably more harm is done in the milder forms of nephritis by the poor diet alone than by the renal disease itself. On the whole, the tendency now is to feed our nephritic patients rather better than we did, and not to restrict protein too much unless the condition is really advanced.

Conclusion.

The various other therapeutic means employed in chronic nephritis are similar to those referred to when discussing the acute condition. The necessity for great care in guarding against cold and other deleterious influences is obvious. In the light of our present knowledge the factor which seems to play the largest part in the treatment of chronic nephritis is that of diet, and in all but extreme cases a good deal can frequently be done to contribute to the patient's comfort and welfare by the use of a suitable dietetic régime based on the principles outlined above.

HUGH MACLEAN, M.D., D.Sc., M.R.C.P.,
Professor of Medicine, University of London,
St. Thomas's Hospital.

[1] Modern Methods in the Diagnosis and Treatment of Renal Disease. London: Constable and Co. 8*s*. 6*d*.

Special Articles.

VENEREAL DISEASE ABROAD.

The Impending Collapse of the Campaign in Germany.

A JUSTIFIABLY lugubrious account is given by Dr. Häffner[1] of the effect the present political crisis in Germany is having on the venereal disease campaign in general, and the dispensary system in particular. This state of affairs is the more deplorable as the dispensary organisation had become remarkably efficient towards the end of the war, and there was every hope that the control exercised by the dispensaries over individual patients would gradually be tightened. Now, according to Dr. Häffner, it is gradually being relaxed, and there seem to be well-grounded fears that the whole dispensary organisation may be dissolved, and patients in an infectious state will be more or less free to pass the disease on to others without much fear of detection. By 1919 there were as many as 138 dispensaries whose clientèle could be counted by the hundred thousand. In the Dortmund dispensary alone 3385 first examinations were made in 1922 and 5271 re-examinations. Courses of treatment were given in 4602 cases. In this and other German dispensaries an organisation was established to secure permanent supervision of the subjects of venereal disease for whom abortive and secondary courses of treatment were provided. It was anticipated that the

[1] Deut. med. Woch., Jan. 18th, 1924.

administration of the new venereal disease law would be mainly in the hands of the dispensary officials and that, as an effective weapon, the fate of the new law would depend on these dispensaries. Originally they were financed by local and central authorities and by the insurance societies. The central authority bore the lion's share of the expense, defraying most of the cost of examination and treatment, towards which the insurance societies also contributed a certain sum. But since 1920 the central authority has disowned one obligation after another, and the other parties to the financing of the dispensaries have also found it convenient to curtail their contributions. In 1923 it was decided in one area that the insurance societies must be entirely responsible for the treatment of their members, the central authority being prepared to provide only examinations and advice free of cost. The result of this decision has been that the insurance societies have failed in many cases to send their members to the dispensaries, being inclined to regard these dispensaries as too great a drain on the resources of the societies. Already about two-thirds of the patients in the Dortmund dispensary have been lost sight of for these reasons, and the time seems not far distant when this dispensary will have to be closed. Already in Baden the dispensaries have been closed, and doubtless the same fate awaits many of the other German dispensaries. When this state of affairs is compared with that which now exists in Great Britain, the points of similarity are striking enough to warrant the suspicion that it is not merely national bankruptcy that is responsible for the change. Post-war inertia and official lassitude are here counteracted by the activities of societies expressly devoted to keeping interest in this subject alive.

Infection Statistics in Switzerland.

The inquiry, conducted by the Swiss Society for Combating the Venereal Diseases, into the frequency of the venereal diseases in Switzerland is the subject of an interesting paper by Dr. W. Feld,[2] who points out that this inquiry covered the period October, 1920, to September, 1921, and that more than three-quarters of the Swiss doctors helped in the compilation of the statistics. Altogether 15,607 cases were thus notified, gonorrhœa being represented by 60 per cent., syphilis by 40 per cent., and ulcus molle by 0·6 per cent. There were four cases of venereal disease, recent or old, for every thousand inhabitants. Striking differences in the distribution of the disease in town and country were observed; only 15 per cent. of all the cases were bucolic. Three-quarters of all the patients lived in towns with a population of more than 10,000 inhabitants, and when to these towns smaller industrial centres were added, 85 per cent. of all the cases could be referred to town areas. In towns with a population exceeding 50,000 the incidence of venereal disease was 10·7 per 1000, whereas in small industrial centres it was only 2·5, and in country districts only 0·9 per 1000. The ratio of male to female patients was as 68 to 32, and among the new cases first diagnosed in the year under review there were as many as 75 males to every 25 females. There may be various reasons for these differences in the sex incidence of recent and old-standing cases; a comparatively great number of cases of gonorrhœa and syphilis in women probably escape detection till they are of old standing. About three-quarters of all the patients were in the twenties and thirties, and most of them were in the twenties. Classification of the patients according as they were single, married, widowed, or divorced brought out some curious facts. The divorced headed the list with 13 patients per 1000 inhabitants. The single came next with 7 per 1000, then the married with 3 per 1000, and finally the widowed with only 2 per 1000. But when the patients were classified with men and women in separate classes it was found that the incidence of venereal disease was higher among widowed men than married men—higher even than among single men between 40 and 49. But among the women the widows showed the lowest rate of infection. It is calculated that about 30 per 1000 of young men in the twenties living in large Swiss towns contract gonorrhœa every year, 5 to 10 per 1000 contracting syphilis in the same period. It is also calculated that there are about 37,000 persons in Switzerland who, at some time in their lives, have contracted syphilis. Of these about 8500 are undergoing treatment. There are also about 12,000 undergoing treatment for gonorrhœa, and every year there are about 100 new cases of general paralysis.

With regard to the mode of infection, Dr. Feld calculates that 80 per cent. of the married women traced it to their husbands, while 7 per cent. were infected before marriage, and 13 per cent. contracted venereal disease by extra-marital relations. Of the divorced women, 54 per cent. attributed their infection to their former husbands. In the case of the male patients, however, it was very exceptional for the husband to trace the disease to his wife; 40 per cent. traced it to prostitutes. It was found that the part played by prostitutes in spreading disease varied considerably with the different social classes; business men, clerks, and artisans were comparatively seldom infected by prostitutes, whereas the scientific professions, students, and waiters referred their infection in a comparatively great number of cases to prostitutes. About half the students had contracted venereal disease abroad. Though these figures do not, of course, include every case of venereal disease in Switzerland, they evidently give a very accurate picture of the comparative incidence of venereal disease under a variety of different conditions.

[2] Schweizerische Zeitschrift für Gesundheitspflege, 1924, iv., 105.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Edinburgh: Special Out-patient Clinics.

THE diabetic out-patient clinic recently started under Dr. Murray-Lyon makes the third of the special out-patient clinics now in operation at the Royal Infirmary, Edinburgh. The other two are for cases of lupus and for tuberculosis respectively. The lupus clinic, the father of them, was started by Sir Norman Walker in September, 1919. The scheme was conceived just before the war, but for obvious reasons it was not possible to get it thoroughly under way until after the war was over. The tuberculosis clinic was opened by Sir Robert Philip in October, 1921, with the assistance of Drs. Fergus Hewat and Jack Simpson, and is now under the charge of Dr. Hewat. The plan of working in all three clinics is largely on similar lines: the patients are seen in turn by the physician, progress noted, and necessary treatment carried out.

Lupus.—The lupus clinic has a roll of about 120 patients, with an average weekly attendance of about 40. An attendance roll is taken and patients must attend regularly, as instructed. Each patient is examined by the doctor, and changes in his condition are noted on his case-card along with any treatment carried out. About half the patients are being treated with tuberculin, and a number are now receiving Tungsten lamp treatment. The period of reporting varies from once a week to once every three months. Suitable arrangements are made for patients requiring hospital treatment and nursing or other medical attention.

Tuberculosis.—The tuberculosis clinic is run on very much the same lines. The cases are mostly children with abdominal tuberculosis and tuberculous glands. There are some 240 on the roll, and the average weekly attendance is 60. For diagnostic purposes each patient is rubbed with 10 per cent. Moro's ointment, and if this fails to produce a reaction 40 per cent. is used. The routine is as follows. Each patient is weighed. The weight is charted on his case-report, and he is then sent in with his case-report to the doctor for examination, and progress is noted. After this he is rubbed with Moro's ointment, beginning with 10 per cent. and working up to 40 per cent. The inunction is the only

specific treatment, tuberculin injection not being used. Instructions are given as to rest, exercise, diet, fresh air, &c. Arrangements for sanatorium treatment are made for acute cases and for those whose progress not considered satisfactory. The cases are all recommended by practitioners or from the wards of the Infirmary.

Diabetes.—The diabetic clinic resembles in general the other two. Although it has only been going a few weeks there are already about 70 on the list, with an average weekly attendance of 30. Each patient brings a specimen of urine collected over 24 hours, which is tested for sugar and acetone. The patients are then seen by the doctor, their progress or otherwise estimated, and the diets raised, lowered, or repeated as may be required. The special diets, as suggested by Dr. Murray-Lyon, are used. Dietetic treatment is chiefly employed, insulin not being used except in cases previously investigated. Severe cases requiring insulin treatment are put on the waiting list for admission, and in the interim are put on dietetic régime, so that when they come to be admitted the necessary time of in-patient treatment is materially lessened.

The advantage of this organised method of treating patients suffering from diseases requiring lengthy treatment lies in ensuring a concentrated study of the special disease, and in obtaining correct and persistent treatment, which is so essential for satisfactory results. The amount of time and labour saved is very considerable, the collecting of statistics is greatly facilitated, opportunities for mass experiments are afforded, and from the point of view of teaching the method offers many advantages. From the economic and social standpoint it would seem to provide the solution to the problem of dealing with chronic disease. The more effective treatment of these conditions should materially lessen the amount of economic disability caused by them. At the same time, from the teaching aspect it cannot be ignored that this scheme has the disadvantage of withdrawing such cases from the ordinary out-patient department, where the student is more likely to see them, and necessitating his attendance at a number of special clinics which may be held at times which make it difficult for him to attend.

Public Health Administration.

From the Scottish Board of Health comes the announcement of the loosening of governmental purse strings towards the public health services. A public health circular of February, 1921, imposed the restrictions (as stated in the Public Health Circular No. 1, 1921) on the development of grant-aided services, such as maternity and child welfare, tuberculosis, venereal diseases, welfare of the blind, and port sanitation have now been withdrawn. The Board will accordingly be prepared to consider on their merits developments of these services which appear to local authorities to be advisable and are within their powers. With the approval of Parliament, the Board will make grants for approved expenditure on such developments at the rate applicable to the service and subject to the usual conditions. In regard to grant for the treatment of tuberculosis, local authorities are informed that grant at the rate of 50 per cent. will be paid on all approved expenditure incurred by them in the year 1923–24, subject to the usual conditions. It is to be hoped that these increased opportunities for advance will be followed by correspondingly satisfactory results.

ST. GILES'S HOMES FOR LEPERS IN ENGLAND.—This asylum, situated in a remote part of the country, the only hospital for lepers in England, is at present struggling for want of sufficient funds. A generous donor has offered 5*s.* for every £1 that is collected up to £4000, and it is hoped that the homes may benefit to the full extent of this offer. Donations may be sent to the Hon. Secretary, Mr. R. C. Bolton, 10, Old Jewry-chambers, London, E.C. 2.

Correspondence.

"Audi alteram partem."

INDUSTRY AND MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR,—Factory law is a prominent part of public health legislation; it aims at preserving the health of the industrial population upon whose activity and productivity the community depends. We are right to be proud of our code of industrial legislation, which has been the model for similar legislation in all other countries; and the more we congratulate ourselves upon having been pioneers the more jealous we should be to remain in the front, but conditions in industry change rapidly, as has been shown in the series of articles, the last of which appeared in your issue of Feb. 23rd, and with industrial progression come new circumstances requiring new enactments. The subject is topical at the present moment, when a consolidating Factory Act may shortly be expected to be before Parliament.

Much has happened since 1901 when the present main Act was passed; supplementary Acts have been passed and new powers have been taken; experience gained in other countries has come to hand; a new spirit, bringing together employers and employed, has arisen in industry; new knowledge has been acquired and is still being acquired with regard to the economic value of the human machine; physiological laws underlying activity are being made manifest. There is to-day a greater tendency than in the last century for legislation to be based on the foundations of research rather than on special or immediate needs for remedying admitted evils. Medical research with regard to industrial activity has advanced, but so far the services of the medical profession have been but little used by industry—except in legal disputes for compensation claims. A staff of five medical inspectors of factories seems inadequate to control the health of some 7,000,000 factory workers, while the miners are left without any medical inspection. Truly there are certifying factory surgeons whose post was created as long ago as 1844; but their duties have not developed with the development of knowledge. Their main function to-day is to certify as fit for work young persons under 16 years of age; but as these young persons are not seen again, no chance is given for checking decisions; while for those employed in mines even this perfunctory supervision has never been established. Industry, familiar with these meagre duties, would appear to judge thereby the value of professional services, and to be content.

At present the post of certifying factory surgeon would seem to be of the nature of a vestigial remnant of historical interest, save where individual enthusiasts assume on high motives greater responsibility. The industrial doctor, practically unknown in this country, is well recognised in America where his services are appreciated to be an economic asset, and where there now exists a flourishing Association of Industrial Physicians and Surgeons. Doubt may be expressed as to the expediency of forcing a medical service upon industry by legislation; the relation of the State to its component parts cannot be summed up in the word "coercion." Nevertheless, obstacles in the way, such as the post for the certifying factory surgeon, should be removed and power might be taken, as in the case of welfare supervision, to call for medical supervision, which to commence with might be demanded for first-aid stations in large factories and subsequently be extended in the light of experience gained. Industry came into existence to provide health needs; these needs created industry. Industry should be, and indeed is, our greatest organisation for maintaining health; but it requires guidance.

I am, Sir, yours faithfully,

Cardiff, Feb. 19th, 1924. EDGAR L. COLLIS.

THE POSITION OF PSYCHO-ANALYSTS.

To the Editor of THE LANCET.

SIR,—The letter signed "A Teacher" in your issue of Feb. 23rd raises questions of interest even to those of us who have no direct concern with psycho-analysis. "A Teacher" implies that current methods of controversy are ethically unsound and intellectually incompetent. Both implications appear to me to be correct. Perhaps the ethical problem may be illustrated by a hypothetical case. The measurement and correction of errors of refraction are part of the ordinary work of medical practitioners, and retinoscopy is a method used by them. Errors of refraction are also treated by medically unqualified persons, and some of these, too, may possibly employ retinoscopy. If two Fellows of a College of Physicians of Surgeons wrote a treatise denouncing the evils wrought by persons termed retinoscopists but not otherwise specified, if the authors permitted that treatise to be reviewed in the daily press and subsequently wrote a letter in a daily paper containing further denunciations of retinoscopists, very few medical men would hesitate to describe the authors' conduct as grossly unethical. It is not clear to me that the substitution of the word psycho-analyst for retinoscopist and the consequent transformation of fiction into very recent fact alters the ethical position.

The intellectual incompetence of much Freud-supporting and Freud-demolishing printed matter—it cannot be termed literature—is obvious enough. Not to complicate matters, consider a single branch of the subject, that concerned with the interpretation of dreams. Some supporters of Freud's *Traumdeutung* almost appear to think that the method of Mr. Sherlock Holmes is scientifically adequate. It is, of course, mildly interesting when the Mr. Sherlock Holmes of real life deduces from the unbrushed condition of a hat that its owner's wife no longer loves him, and is able to say truthfully that the wife of the owner of the particular hat investigated really disliked the owner. But before we can attach great diagnostic value to the amount of dust upon hats in elucidating conjugal relations, we shall certainly need—dare I say—*statistics* of the distribution of many dusted and undusted hats in association with a distribution of wives loving and neglectful.

But the Sherlockian method, although not reasonable, has at least some affinity to reasoning. There is a lower deep. One may, for instance, set out the variety of symbolical interpretations which Freud and his adherents have assigned to the same or similar dream contents and assert that this variety *proves* what nonsense the whole business is. This enumerative process, sweetened by jokes of varying merit, is widely used. But its power as an instrument of research has not yet been fully appreciated. Thus it follows at once from the fact that in English the same word—e.g., box—means ten different things according to the context, that our mother tongue is mere gibberish. It is also quite plain that any man who pretends to effect the differential diagnosis of pneumonia and typhoid fever by purely clinical means is a quack, because Osler himself admits having brought a case before his class "one week as typical pneumonia, and a fortnight later shown the same case as undoubtedly one of typhoid fever." Much popular anti-Freudian writing is on this puerile level; but there is criticism which, while insufficient, is at least rational. We assess the value of diagnostic rules in bodily disease, sometimes by appeal to post-mortem verification, more often by the emergence, after the rule has been applied, of signs or symptoms which we deem crucial. What analogous tests are applicable to the Freudian rules? If I dream of ascending a moving staircase, how can I be sure that the meaning is erotic, how can I know that the "free associations" which, by all returning to a sexual *motif*, support that interpretation do not so return because I am unwittingly dragging them there, having read Freud's book? The answer is, of course, that I cannot be sure.

Two methods of rational examination have been suggested. A. v. Muralt[1] wrote down the dream of a patient and the "free associations" of the leading contents; he sent the transcript to a number of psycho-analysts, and invited them to interpret the dream and give a diagnosis. The author considered the concordance between the interpretations and the subsequent evolution of the case satisfactory. Another method is to do what Freud and de Sanctis (not a Freudian) have done, and what the late Dr. Rivers was doing—viz., record and study one's own dreams, not for a week or two, but for years. The collation of a large number of records might help us to reach, not the truth, but a field in which truth could be sought.

At present we are deluged with a flood of silly little books and articles the authors of which have made no independent investigations whatever, and frequently cannot even read the language in which much of the literature of the subject is published.

I am, Sir, yours faithfully,

Loughton, Feb. 24th, 1924. MAJOR GREENWOOD.

To the Editor of THE LANCET.

SIR,—When one finds in the same issue of THE LANCET Dr. Crichton Miller ranged on the side of those who urge that the study and treatment of emotional disorders should be approached from a physical point of view, and "A Teacher" who views the subject from the standpoint of orthodox medicine, advocating the serious consideration of the claim of psycho-analysis to full recognition as an essential factor in current medical science, the hope revives that the long overdue reconciliation between the dissociated halves of the science of healing may at last be within sight.

Dr. Miller, whose right to speak for psycho-therapy can hardly be questioned, disarms its opponents by seizing their weapons and himself attacking the position of those psycho-therapists who bring ridicule upon their profession by ignoring the physiological aspects of nervous disease. This he does with such vigour that he is moved to offer excuse for his attack, on the ground that "the therapeutic contribution of analytical psychology is too important and its possibilities too valuable to be exposed to criticism and even ridicule because of the apparent incapacity of certain analysts to correlate their psychological theory with physiological observation." Such criticism from such a critic will be welcomed by most level-headed psycho-therapists; yet the errors for which Dr. Miller flagellates his colleagues are such as occur very readily amid the dust of conflict. When the analyst who has first-hand evidence of the causation of hyperthyroidism by emotional stress is subjected to ridicule at the hands of endocrinologists and surgeons, who themselves have first-hand evidence of the causation of emotional stress by hyper-thyroidism, he very naturally resents the illogical intolerance of his opponents, and perhaps retorts that thyroidectomy in such cases should be and will be punishable as a criminal assault. The contestants on both sides fail to recognise clearly that they are dealing with a vicious circle. The therapeutic problem in every case involves the breaking of this circle at the point or points most accessible to attack. The ideal treatment may be a complete psycho-analysis; in practice this is usually impossible, and failing a sufficient measure of control by organo-therapy an honest psycho-therapist will invite the opinion of a surgeon as to the feasibility of a partial thyroidectomy.

But in the heat of conflict the psycho-analyst, like his opponents, too often adopts a self-sufficient and partisan attitude, and even Dr. Miller, in the very act of taking the lead in the direction of reconciling the rival claims, is not quite guiltless of setting them one

[1] Schw. Archiv f. Neurologie u. Psych., 1922, xi., 13.

against the other. But this is a minor criticism; the main point is that Dr. Miller, with an assured place among the psycho-therapists, has opened the door to a sane review of their methods from the point of view of general medicine, while "A Teacher" leads the way in equally sane criticism of their opponents as such. I am concerned to support rather than to criticise their action; for surely it is obvious that the conflict between the claims of the body and the claims of the mind can be settled only by mutual acceptance and agreement. If the materialist is able to establish some such position as that the mind is the sum of the conscious and potentially conscious reactions of the physical body, it does not follow that the mind is "nothing but" this. In ordinary human experience one mind can have no traffic with another except by way of the interactions of the corresponding physical bodies. It does not follow that there is no such thing as mind. Again, the fallacy of assuming that a thing ceases to be when it is analysed and understood is very prevalent. An eminent endocrinologist addresses a meeting of psychologists and gives them much valuable and interesting information as to the functions of the internal secretions; but he appears to expect them either to deny his contention that emotional reactions are in large measure a function of internal secretions, or to accept his corollary that the psychological study of emotional reactions is superflous. Lest I should be judged guilty of that partisan attitude which I deplore, let me add that psycho-analysts appear to me to be equally liable to the above-mentioned fallacy. They may, for instance, tell you that there is no such thing as a herd instinct, because they have been able to show that the reactions included under this name have been built up from self-preservation and sex instincts. But is this any proof that the herd instinct has no real existence? It might with equal reason be maintained that there is no such thing as a man, because his body is "nothing but a colony of cells."

Physical and psychological schools alike have great need of the recognition of the positive truths established by each other; their mutual negativism has lasted too long, and it is devoutly to be hoped that it is nearing its end.

I am, Sir, yours faithfully,

J. NORMAN GLAISTER.

New Cavendish-street, W., Feb. 23rd, 1924.

SMALL-POX AND VACCINATION.

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 16th there is a sentence in Dr. A. H. G. Burton's letter which has caught my attention. He says "we are not quite sure whether the American type of small-pox breeds true." My first case of small-pox was notified in Bentley-with-Arksey U.D. on August 25th, 1922. I had then and for some time after the same doubt about the type of small-pox breeding true. Since the date in question up till Tuesday last there have been 185 cases notified in the districts of which I am medical officer of health. There have been no deaths.

I am quite sure this particular type of small-pox—call it American or what name you like—is small-pox, and breeds true to type. I may add that the present outbreak of small-pox has interested me very much, as it was my good fortune to be a resident medical officer at the City of Liverpool Fever Hospital, the Dingle, in 1902–03, when the hospital was emptied of scarlet fever and diphtheria and the whole 400 beds given up to small-pox. Speaking from memory, over 2000 cases passed through the wards. The picture presented by many of the unvaccinated cases resembles those shown in the late Dr. Ricketts's work on the "Diagnosis of Small-pox," Plates LIII., LIV., and LVI. Small-pox of that epidemic left on my mind the indelible impression that it was, at any rate in the unvaccinated, both a "killing disease" and a mutilating one to the survivors.

The type of small-pox we are now experiencing is neither a killing nor a mutilating one. This was brought home to me as early as Oct. 1st, 1922, when I was called into consultation and saw an unvaccinated father, aged 33, in bed with his unvaccinated infant, aged 3 months; both were covered with a small-pox rash of medium density. The infant had it worse than the father. Both recovered and came out of hospital on Nov. 3rd. The mother brought the child to see me on discharge, and it was with difficulty I could find any scars.

Another thing has struck me about the present type is that the history of the invasion is most important. The invasion is definite and severe. When a collier, in the pink of health, has to leave off work for a headache or backache, you may be sure that it is a "knock-out" one. The next thing is that the number and character of the individual lesions are often quite insignificant considering the severity of the initial symptoms. But the lesions occur in the classical positions if looked for, but they are often quite scanty even in the unvaccinated.

Lastly, a word about "bad arms." I have seen a good few in my own practice and that both of public vaccinators and private practitioners. They usually occur in adults. I have seen most successful results in families amongst the younger ones and "bad arms" amongst the elders when vaccinated at the same time with the same lymph. I draw attention to these facts as there is no use burking them. I impute no negligence to anyone, but of one thing I am sure, and that is that more revaccinations would be done amongst adults if the dread—for which there are some good grounds—of "bad arms" could be successfully met.

I am, Sir, yours faithfully,

A. B. DUNNE, M.B. Camb., D.P.H., &c.

Doncaster, Feb. 26th, 1924.

THE TRAINING OF THE OPHTHALMIC SURGEON.

To the Editor of THE LANCET.

SIR,—Ophthalmology is one of the most strictly scientific parts of medicine, being founded largely on physics, physiology, and pathology. Before a man begins practice as an ophthalmic surgeon he should have a fairly extensive training in physical and physiological laboratories. Up to the present time the General Medical Council, notwithstanding many a hint, has made no provision for the training and registration of ophthalmic practitioners. I put it bluntly when I say that any person who is rich enough to buy a case of trial lenses and test types can call himself an eye specialist. I know we have plenty of men in the United Kingdom who are worthy successors of Bowman and Nettleship, but there is nothing to distinguish them from the considerable number of practitioners who have never been either in a physical or physiological laboratory. The issues at stake are so important that the eye specialist should be trained just as extensively as is the specialist in public health.

I cannot attach much weight to the diplomas at present given in the United Kingdom. The course of study for these diplomas is not at all adequate. As an extreme example of what is possible: an eye specialist recently informed his readers that Maddox had announced the fact that the hypotenuse of a right-angled triangle is equal to the square root of the sum of the squares of the other two sides, and in the same contribution he said that Maddox had found that the angle between any two straight lines is given by the sine of the angle. Now a man who does not know the forty-seventh proposition of the first book of Euclid when he sees it and who does not know the trigonometrical functions of an ordinary right-angled triangle has never been a student in a physical laboratory and is quite incompetent to read the special parts of ophthalmic literature.

The danger that I see is this. There are a large number of opticians clamouring to be recog-

nised as eye specialists of a sort. Instead of having two months of study, as is required for some of the ophthalmic diplomas, these men have had perhaps two years, devoted almost entirely to the very important subject of the testing of refraction errors and of muscular errors. Personally I am opposed to registering these men as qualified ophthalmic practitioners. They certainly have received a better training in a very important sphere of ophthalmology than a good number of persons who are practising as ophthalmologists. The opticians referred to are agitating for registration. Ophthalmic surgeons may reasonably say that these opticians are not qualified; nor are they. But it is open to them to reply that there is no guarantee that ophthalmic surgeons are properly qualified. Probably these opticians have a much better training in the physics of vision than have a fair number of the eye specialists, and my objection to their being regarded as qualified to practise arises from the fact that muscular testing and refraction testing form only a small part of ophthalmic work. It does not take in the ordinary diseases of the eye, nor does it take in the important relationships between ophthalmology and neurology, nor the surgical work.

Personally I would regard any licensing of opticians to practise any part of ophthalmology as a public danger. At the same time I do acknowledge that a number of these opticians have, so far as theory is concerned, an excellent knowledge of optical work. There is a grave risk of their being recognised as ophthalmic practitioners, and so long as the General Medical Council tolerates the present state of affairs it seems to me that the opticians have a good case.

I am, Sir, yours faithfully,

Glasgow, Feb. 27th, 1924. FREELAND FERGUS.

DOCTORS AND ADVERTISING.

To the Editor of THE LANCET.

SIR,—Dr. Harold Spence's courageous, sane, practical, and humorous article under the above heading appearing in your issue of Feb. 23rd must, I think, express the opinion of the majority of medical practitioners. He satirises the convention which permits advertising through bulletins or news paragraphs, whilst discountenancing press references to medical men which appear to have no professional advertising value, and he claims a medical man's complete and unassailable right both legally and morally to secure publicity in certain ways, provided always that he is careful to preserve the rules of professional honour.

Dr. Spence draws attention to the unfortunate position in which the practitioner interested in the treatment of venereal disease finds himself, owing to the competition with free venereal clinics, where the financial position of the patient attending is not considered, and where the clinic is enabled to obtain that publicity which is denied the private practitioner.

The point which I wish to emphasise, however, is that the health and efficient medical service of the public is more important even than professional dignity. In the majority of diseases if a member of the public desires to have the opinion or treatment of a medical man especially experienced in the disease from which he suffers, he usually either follows the advice of his family doctor or of his friends in regard to the medical man he should consult. As regards venereal disease, however, the case is different, and he frequently carefully avoids his family doctor and is ashamed to ask his friends' advice. The usual reference works prove of little use to him as he does not know any name to look up, and does not feel inclined to wade through a long directory until he finds a name of a practitioner who appears to devote himself to this class of work. In many cases, therefore, he applies for information either to a venereal clinic or to a chemist as to whom he should consult, and it appears natural to presume that the advice tendered by institution or chemist would be influenced by personal association, and would not necessarily be in the best interests of the patient.

What seems to be desirable from the public point of view is such publicity as would be obtained in a carefully drawn-up register, copies of which would be easily accessible to the public, containing the various diseases or branches of medicine under different headings, and supplying details of practitioners claiming special experience in regard to such diseases. This register or directory could be drawn up by some competent authority and would contain the data, such as hospital or clinic appointments, publications, &c., on which the public would be able to form an opinion and arrive at a conclusion as to whom to consult. If some such register were widely advertised it would be a means of protecting the public and securing adequate publicity without advertisement for medical practitioners who have had special experience in certain branches of the profession.

Some of the existing books of reference could easily be adapted by adding a section in which practitioners' names were grouped under the diseases or branches of the profession in which they were interested, and their records could then be looked up in the preceding alphabetically arranged portion.

I am, Sir, yours faithfully,

H. WANSEY BAYLY.

Harley-street, W., Feb. 23rd, 1924.

LEPROSY: A SELF-HEALING DISEASE.

To the Editor of THE LANCET.

SIR,—In 1891 Dr. Kaurin showed me over the Leper Hospital at Molde, Norway, and drew my special attention to an apparently perfectly healthy young girl of about 23. He assured me that when she was first under his care she was a typical leper, but for some months all signs of the disease had left her, so that at the present time no one could have suspected that she had ever been a leper. I do not know the sequel, for on my next visit to Molde four years later I found, to my great regret, that the Leper Hospital there was closed.

I am, Sir, yours faithfully,

London, N.W., Feb. 23rd, 1924. LEONARD J. KIDD.

THE EXPLOITATION OF NURSES.

To the Editor of THE LANCET.

SIR,—The Chairman of the Finance Committee, General Nursing Council, seems satisfied that all is for the best in the best of all possible worlds for the nursing profession and the public. He rightly pleads that a fee of five guineas for *two* examinations is not excessive, but this does not alter the fact that every candidate will have to pay five guineas, and some will have to pay more if they fail to pass either examination on one or more occasions.

I am anxious to know what sort of standard the G.N.C. proposes to adopt. Will it be so high as to ensure the failure of a considerable number of candidates, and act as a deterrent to girls thinking of becoming nurses? Or will it be so low as to render the pretentious syllabus ludicrous and the examination a farce? Even a moderate percentage of rejections will have a tragical effect and a very low one will be comical.

My suggestion that the G.N.C. is anxious to obtain better and more expensive accommodation, like my other criticisms, is ignored. I note that a paragraph in the *Nursing Times*, Feb. 9th, states that the Council recently "turned down the house in Portland-place, evidently an attractive proposition." And there is no attempt to controvert my point that hard work for three years on a minimum salary and heavy fees for examination, with the possibility of rejection, will cause a deficiency in the supply of nurses. Certainly the policy of registration has not improved the quantity or quality of the girls entering our hospitals for training.

Seeing that registration is not compulsory and that the passing of a State examination is not essential to becoming a competent nurse, the G.N.C. is ill-advised

in creating the impression that their syllabus and examinations will render registration difficult of attainment. At present there are many partially trained nurses, some excellent, in private work. If those now in training refuse to pay for the risks of examination and are content with a certificate of three years' full training at a general hospital, it is probable that they would have little difficulty in obtaining work or would be inferior to registered nurses. I have heard much grumbling from qualified and unqualified nurses on the lines of my former letter, but those who know the nursing world will understand the reluctance to express their views in print. As for their ability to exercise any influence by voting for representatives on the G.N.C., most of them know as little about nursing politics as about general politics. Even those who voted in favour of registration were generally ignorant of what they were doing, signing because the matron or sister of the ward told them to. I do not know whether the G.N.C. publishes an audited balance-sheet. Certainly registered nurses do not receive a copy and are in complete ignorance of the expenditure on this wretched farce, as well as knowing nothing of the general policy of their Council.

I am, Sir, yours faithfully,

Park-street, W., Feb. 25th, 1924. EDMUND CAUTLEY.

VARIATIONS IN SUSCEPTIBILITY TO INSULIN.

To the Editor of THE LANCET.

SIR,—In the course of an experimental research upon insulin, on which we have been engaged for some time, we have found that the colour of the animals with which we experimented had a very material influence upon their susceptibility, albino rabbits and mice being able to withstand without apparent harm an amount of the same preparation which proved rapidly fatal to naturally coloured or piebald animals of a similar weight, whereas black rabbits and mice quickly succumbed to a dose from which naturally coloured or piebald animals recovered. The reason for this peculiarity is being investigated, and we hope shortly to publish our results in detail. Apart from their theoretical interest these observations are of considerable importance seeing that the present method of standardising insulin is based solely upon its physiological effects upon rabbits and mice. It is obvious that unless animals of the same colouring, as well as of standard weight and condition, are employed there may be considerable variation in the potency of the unit. It seems possible also that the different susceptibility of albino and self-coloured rabbits to insulin may account for the apparent loss of potency of preparations sent from this country to the tropics. It has been stated, for instance, that four times the amount of insulin which reduced the blood-sugar of a rabbit in England to 0·042 per cent. only reduced the blood-sugar to 0·062 per cent. in India,[1] but as we understand that the Himalayan rabbit with which the experiments were probably carried out in India is a pink-eyed partial albino, the difference in these results may have been due to that fact.

We are, Sir, yours faithfully,

P. J. CAMMIDGE.

London, Feb. 21st, 1924. H. A. H. HOWARD.

TREATMENT OF LIVER ABSCESS BY ASPIRATION.

To the Editor of THE LANCET.

SIR,—Dr. A. R. Neligan, in his article on this subject in your issue of Dec. 29th, 1923, refers to a paper of mine read before the Medical Section of the Asiatic Society of Bengal and published in the *Indian Medical Gazette* of March, 1914. As his reference to my paper gives a wrong impression, I shall be glad if you will permit me to correct it. In the first place, the series of 101 cases were all my personal ones, operated on in many different hospitals, not all in Bengal, and the case-histories were taken from my private case-book, not compiled from old hospital notes, thus ensuring a greater accuracy. Secondly, my earlier cases, beginning in 1900, were treated by incision and drainage, and these were followed by treatment by aspiration and the injection of quinine in the cavity, and the last set of cases were treated by aspiration alone, followed by the injection of emetine hypodermically immediately the aspiration was finished: the results of this last method being immeasurably superior to the old operation. I have therefore been a strong advocate of aspiration combined with the administration of emetine for many years. The subject being apparently still of some interest, I propose to publish shortly another series of 63 cases.

I am, Sir, yours faithfully,

E. OWEN THURSTON,
Lieutenant-Colonel, I.M.S.

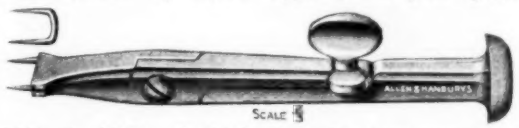
Chinsurah, Bengal, Jan. 29th, 1924.

[1] THE LANCET, Jan. 12th, 1924, p. 101.

STAPLE HOLDERS FOR ROUX'S OPERATION.

To the Editor of THE LANCET.

SIR,—I am interested in the description of a staple holder for use in the Roux operation for femoral hernia by Mr. A. MacLennan in your issue of Jan. 26th. Thirteen years ago a description of a similar instrument devised by myself appeared in your pages



(1911, ii., 1020). I think that this instrument has certain advantages over that proposed by Mr. MacLennan. The scissor form of the clamp ensures a firm grip of the staple and allows of its ready release after it has been hammered into place. The instrument was made for me by Messrs. Allen and Hanburys.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 14th, 1924. C. MAX PAGE.

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt.-Comdr. E. W. Gandy is placed on retd. list with the rank of Surg. Comdr.

ROYAL ARMY MEDICAL CORPS.

Maj.-Gen. Sir David Bruce, ret. pay, late R.A.M.C., is appointed Col. Comdt., vice Maj.-Gen. Sir Owen E. P. Lloyd, ret. pay, late R.A.M.C.

The undermentioned to be Lts. (on prob.): C. R. Christian, J. Huston, E. G. Dalziel, C. W. Greenaway, R. J. Rosie, M. A. Graham-Yooll, and L. F. O'Shaughnessy, from R.A.M.C., T.A. Gen. List.

The undermentioned Lts. are secd.: M. A. Graham-Yooll and L. F. O'Shaughnessy.

MILITIA.

Capt. J. A. Charles relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

Capt. F. J. Whitelaw (late R.A.M.C.) to be Capt.

Capt. G. B. Brand to be Maj. (Prov.).

Supernumerary for service with the O.T.C.—Maj. A. E. Webb-Johnson ceases to be empld. with the London University Contingent, O.T.C.

Capt. (Local Maj.) T. B. Layton resigns his commn. and is granted the rank of Lt.-Col. with permission to wear the prescribed uniform.

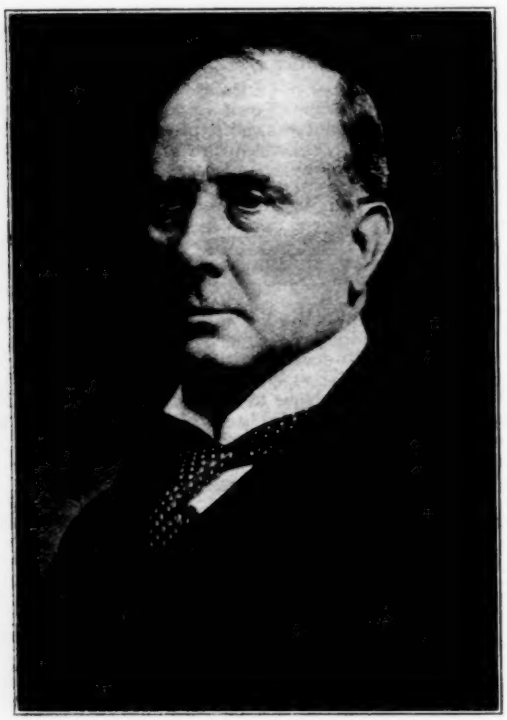
HONG-KONG UNIVERSITY. — The Rockefeller Foundation has allocated the sum of $250,000 to the University for the chairs of medicine and surgery. Hong-Kong University was founded in March, 1911, for British subjects, and degrees in arts, medicine, and engineering are conferred.

Obituary.

SIR MALCOLM ALEXANDER MORRIS, K.C.V.O., F.R.C.S. EDIN.

THE sudden death of Sir Malcolm Morris on Feb. 19th, at Bordighera, marks the passing of a man who, for upwards of half a century, fostered the progress of medical science in its widest aspects.

The fifteenth child and youngest son of Mr. John Carnac Morris, of the Madras Civil Service, he was born in Mansfield-street, Portland-place, in 1849. His medical student days were spent at St. Mary's Hospital, where, after qualifying M.R.C.S. at the age of 21, he served a year as house surgeon before taking up general practice in Yorkshire. He visited Berlin and Vienna, continued medical studies, and at the latter centre became interested in dermatology. On his return to England he was appointed clinical



[*Photo by Elliott and Fry.*

SIR MALCOLM MORRIS.

assistant at the Blackfriars Hospital for Diseases of the Skin, and later lecturer on dermatology at his old medical school attached to St. Mary's Hospital. He took the F.R.C.S. Edin. diploma in 1880, and in the same year became definitely surgeon-in-charge of the skin department at the hospital, and his work there for the next 20 years, both as a medical man and as an author and a public servant, undoubtedly served the institution well.

The study of dermatology at St. Mary's Hospital, and also at the Seamen's Hospital, Greenwich, where he was dermatologist, focused his attention almost from the first on the two great scourges of tuberculosis and syphilis, and during the full half century in which they claimed his attention and practical skill he saw the foundation laid for their eradication. Clinical and pathological work had been profuse in respect to both diseases, but the ætiology was unknown and the therapeutics were directed only to symptoms. The immense possibilities of Koch's discovery of the tubercle bacillus in 1882 at once appealed to Morris. No sooner had the discovery been proclaimed than he journeyed to Berlin and was privileged to witness the first demonstration by the great bacteriologist. One of the foremost amongst the supporters of Koch's theories in England, in 1899 he represented the National Association for the Prevention of Tuberculosis at the Congress in Berlin, and in 1901 he was secretary-general of the British Congress on Tuberculosis, the occasion on which Koch expressed his much criticised and since discredited views on the mutual relations of human and bovine tubercle bacilli. In the same year he visited the United States and delivered the Lane lectures in San Francisco.

The great attack on tuberculosis by the medical world was paralleled a decade later by the advance made against syphilis. In 1905 came the discovery of the spirochætes and following this discovery the modern treatment of syphilis. In 1913 Sir Malcolm Morris, realising the apathy in the public mind towards the disease and the general conspiracy of silence on the whole question, put forward a powerful appeal for the appointment of a Royal Commission on Venereal Diseases, and saw his proposals realised in the autumn of that year. He served on the Commission for the three years of its existence, and when the National Council for Combating Venereal Diseases was established in 1914, Morris was elected one of the vice-presidents. Here his views on prophylaxis were strenuously opposed to the indiscriminate dissemination of self-disinfection as a reliable measure of protection. In 1917 he published "The Nation's Health," as an effort directed to the stamping out of venereal disease, and written for the guidance of lay authorities.

As a dermatologist he enjoyed honorary or corresponding membership in many French, Italian, and American societies for the study of this subject, and was a past president of the Dermatological Section of the Royal Society of Medicine. In 1893 he served the office of president of the Harveian Society of London. He was also a member of the Committee of the Radium Institute. In 1894 he published a manual on "Diseases of the Skin," in which he gave in outline the principles and practice of dermatology. The work was considered as one of the best of the smaller text-books of the day, particularly in its practical aspects, although the author differed from current medical opinion on one or two points. A sixth edition of the book, considerably enlarged, was issued in 1917, a proof of the ever-growing value of Morris's contributions to his subject. He was one of the earliest to employ the Finsen light in the treatment of skin affections in this country, and in 1907, along with Dr. Ernest Dore, he gave a concise description of the practice of radiant method in "Light and X Ray Treatment of Skin Diseases." In 1908 the honour of knighthood was conferred on him, an honour which Sir Malcolm Morris chose to regard as a recognition of the position gained for dermatology as a branch of scientific medical study.

His activities and interest in other branches of public health were manifold. In 1917 he was elected president of the Institute of Hygiene. He was a fellow of the Royal Sanitary Institute, and chairman of the Federation of Medical and Allied Services. He was also a member of the International Council on Leprosy. In succession to his friend, Sir Henry Thompson, he was an advocate of cremation, and long served on the Council of the Cremation Society of Great Britain. In 1919 Morris published "The Story of English Public Health," a volume of an English Public Health Series, of which he was editor. In this book he gave a short history of the growth of the public health movement from the work of Edwin Chadwick, which culminated in the passing of the Public Health Act of 1848, down to the establishment of the Ministry of Health.

Sir Malcolm Morris, as writer and speaker, possessed great energy and facility of expression, and his interest in literature, in particular medical literature,

took a practical form. At an early stage of his career he enlisted the interests of Messrs. Cassell and Co. in medical publications, and in 1883 the firm published under his editorship "The Book of Health," to be followed by two series of manuals, the one dealing with physiology, pathology, and comparative anatomy, the other with clinical subjects, both of which met with success. In 1886 he was co-editor with Dr. Minis Hays, of Philadelphia, of the *International Journal of the Medical Sciences*, and from 1895 to 1902 he took over the editorship of the *Practitioner*, which he conducted with great journalistic ability. Later in life he became a director of Cassells, Ltd.

In addition to his work for the *Practitioner* many of his contributions appeared in THE LANCET and other medical journals. In 1921 he edited, in association with Prof. F. Langmead and Dr. Gordon Holmes, a "Dictionary of Practical Medicine," designed for the working practitioner, which contained in three volumes a symposium of the most modern advances in medical knowledge.

Sir Malcolm Morris married Fanny, daughter of Thomas Cox, of Dorchester, Oxon, and in 1922 his golden wedding was celebrated by a congratulatory luncheon at which a large group of personal and professional friends were present. On this occasion he told[1] of his early struggles in his attempt to make good in London, and asserted that the secret of keeping young was to have, to cultivate, and to preserve interest in public questions when that interest was directed towards the betterment of fellow men. He lived consistently up to his recipe.

ALEXANDER CHARLES O'SULLIVAN, M.B. DUB.

THE death, in his sixty-seventh year, of Dr. A. C. O'Sullivan, professor of pathology in the University of Dublin, which took place on Feb. 18th, is a serious blow to the cause of pathological research in Dublin. He was a remarkable and many-sided man, as his academic career amply demonstrates. The elder son of the Rev. Denis O'Sullivan, rector of Macroom, Co. Cork, he entered Trinity College, Dublin, in 1876 from Dungannon Royal School. When he came up to the University he was equally proficient in classics and in mathematics, but during his undergraduate course decided to take up mathematics and philosophy for his degree. Having obtained a mathematical scholarship in 1879 he graduated with the highest honours in 1881. He was a notable athlete, being a member of the Rugby fifteen and of the University eight. In later life he spent his holidays sailing and was a yachtsman of no mean skill. Shortly after graduating he set himself to read for Fellowship, which he won in 1886. In those days the old system of examination for Fellowship in all sorts of subjects was still in being, and O'Sullivan answered brilliantly in mathematics and with distinction in classics, an unusual combination. Acting on the advice of Dr. Samuel Haughton he decided to take up the medical profession, and having gone through the medical school while acting as a tutor Fellow, he took his medical degrees and, obtaining leave from the College authorities, he spent a couple of years at Frankfurt and Vienna in pathological research. The School of Pathology was created shortly after his O'Sullivan was appointed lecturer. It is not too much to say O'Sullivan's appointment was the most important event in the modern history of the school. He brought a new spirit into the relations of teacher and student. Inspired by his old teacher, Dr. John Purser, then professor of physiology, he was almost entirely responsible for the organisation of the new school and for the repute in which it was held by the younger Dublin physicians. O'Sullivan was in due course elected a Fellow of the Royal College of Physicians of Ireland, and he read many short papers on pathological subjects before the Academy of Medicine and the Biological Club. Careless of personal distinction, he did not publish his work, as his friends often entreated him to do, in the larger pathological journals, but his colleagues had the highest respect for his knowledge and his judgment in regard to pathological problems. He acted as consulting pathologist to one or two of the leading Dublin hospitals.

When the war broke out he took his full share, being appointed Major in the R.A.M.C., and proceeded to Malta, where in 1915–16 he did valuable work on the pathological side in the Army hospitals. He attained the rank of Lieut.-Colonel and was mentioned in despatches in 1917. He was afterwards consulting pathologist to the Irish Command. Recently his lectureship in pathology was constituted a full professorship. He fulfilled the duties of registrar to the School of Physic for the past five years, where his long acquaintance with the several aspects of college life made him specially valuable as a guide to and supporter of the traditions of the University which he loved and served so well.

A colleague at Trinity College, "J. H. B.," writes of him: "All through his working years O'Sullivan discharged to the full his academic duties as a Fellow, and he lectured and examined in arts as well as in pathology to the surprise of visitors to the University who were unacquainted with the old traditions of the College in virtue of which a Fellow was supposed to be able to turn his hand to anything. This antiquated tradition is now rapidly disappearing, but O'Sullivan was a remarkable illustration of its value in the case of really exceptional men. A man of science in the first place, he had wide classical culture, and to the end of his days he pursued the later developments of pure mathematics in his leisure hours. As the fruit of these labours he made several contributions to the mathematical discussions of the Royal Irish Academy. He was one of the most notable figures at Trinity College, and probably there was no one among the teaching staff who was regarded with so much affection by his many pupils and also by his colleagues."

Prof. O'Sullivan married Constance, daughter of the late Canon Whelan, and his widow, with two sons and two daughters, survives him.

ROBERT THOMSON, M.D., M.CH. RUI.

THE death occurred of Dr. R. Thomson, of Margate, surgeon and medical superintendent to the Margate Cottage Hospital, on Feb. 13th, in his sixty-third year. Dr. Thomson graduated M.A. of Queen's University, Belfast, in 1881, where, four years later, he took the medical degree of M.D., M.Ch., qualifying at the same time as L.M.R.C.P.I. In 1887 he entered general practice in Margate, first as assistant and shortly afterwards as a partner of the late Dr. Edward White. From his earliest years as a practitioner he came into touch with the clubs and friendly societies of the district, where by his able and unselfish work he won for himself a position of esteem and respect. He was appointed in 1897 to the surgical staff of the Margate Cottage Hospital, of which he later became medical superintendent. In 1915, in recognition of long years of devoted work, he was elected president, a position which he filled with ability and credit for a period of three years. During the war he was surgeon at Wanstead Military Hospital from 1914 until October, 1917. In 1922 ill-health necessitated the curtailment of his activities, but latterly he had recovered considerably, and his death from pneumonia came as a shock to his many friends.

A colleague, "A. G.-S.," sends the following appreciation: "For many years I had the honour of being closely associated with Dr. Thomson in work, both civil and military, and the mortality percentage with him was so low as to make one marvel. And he did a large amount of operating work, chiefly abdominal. As his anæsthetist for some 12 years I had the opportunity of witnessing his skill and extraordinary care in surgical procedures. Although in his later years Thomson's work was chiefly surgical, yet he was a very fine

[1] THE LANCET, 1922, ii., 207.

type of general practitioner. In medicine his opinion was sound, in gynæcology and midwifery he excelled, and in general and abdominal surgery he had few equals. Reserved as he was, few knew him intimately. But to those few his best characteristics were ever present—generosity, sympathy, a scrupulous care for the feelings of others, and an unswerving sense of friendship. Thomson solved many a difficult problem for a junior colleague; to the younger men he did all he could to help and advise, and by his patients he was revered and respected to a most unusual extent. Two years ago he was afflicted with severe prostatic trouble; just as he was getting well enough for the operation he so ardently desired he had a cerebral hæmorrhage. For 18 months he was condemned to a life of invalidism, and during this long time one never heard from him a single word of complaint. A broncho-pneumonia of a very toxic type ended the life of one who, delicate in physique, had a strength of character and courage under difficulties rarely seen."

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, FEB. 19TH.

Free Treatment of Venereal Disease.

Mr. SOMERVILLE HASTINGS asked the Minister of Health if he could give any estimate as to the result the provision of free treatment by the State had had on the incidence of venereal disease; and whether, if the result had been good, he intended to adopt similar methods for free treatment for other diseases.—Mr. WHEATLEY said: The information in my possession tends to show that the incidence of these diseases is declining, and that the provision of free treatment has undoubtedly contributed to that result. As my hon. friend is aware, there are certain features of these diseases which differentiate them from other communicable maladies, and which render the provision of free treatment especially desirable in the interests of the community. I could not undertake, within the limits of question and answer, to discuss the expediency of adopting similar methods for other diseases.

Hospital Accommodation.

Mr. SOMERVILLE HASTINGS asked the Minister of Health whether he could give the number of persons at present requiring treatment in the hospitals of London and unable to obtain it through lack of beds; and what he proposed to do to provide the necessary hospital accommodation for such people.—Mr. WHEATLEY said: No information is at present available, and considerable inquiry would be necessary to obtain even an approximate estimate. I propose, however, to ask the Voluntary Hospitals Commission to report on the extent of the additional accommodation required and the best means of providing it. The hon. Member is doubtless aware that provision of hospital beds is not within my statutory powers.

WEDNESDAY, FEB. 20TH.

Royal Commission on National Insurance Service.

Sir KINGSLEY WOOD asked the Prime Minister whether he proposed to advise the setting up of a Royal Commission to investigate the medical service under the National Insurance Act and kindred matters.—Lieut.-Colonel FREMANTLE asked the Minister of Health whether, seeing that a court of inquiry had recently estimated the value of the medical service under the national health insurance system, he would advise the appointment of a Royal Commission, as promised by his predecessor, to investigate the administration of national health insurance.—Mr. WHEATLEY (Minister of Health) replied: The Government propose to advise the setting up of a Royal Commission as soon as arrangements can conveniently be made to inquire into and make recommendations as to the whole system of national health insurance.

Sir KINGSLEY WOOD asked the Minister of Health the steps he proposed to take in connexion with the recommendation of the court of inquiry into the remuneration of medical practitioners on the panel.—Mr. WHEATLEY replied: The question of introducing the legislation required to give effect to the recommendations of the court of inquiry is now under consideration, and I am not yet in a position to make any statement.

Leprosy in the United Kingdom.

Mr. BECKER asked the Minister of Health the number of cases of leprosy notified in the United Kingdom during the last annual period; how many persons in the United Kingdom are suffering from leprosy; and for information as to the efficiency of the new cure for leprosy.—Mr. WHEATLEY replied: Leprosy is not compulsorily notifiable in this country, and the information available as to the number of persons suffering from this disease is only approximate. It is, however, known that the total number of cases in this country is very small, and during the past 25 years official records show that only 24 cases have been imported. As regards the last part of the question, the Secretary of State for India tells me that favourable reports are being received from that country regarding new methods of treatment, but it is not yet possible to say what proportion of cases can be cured.

The Influenza Outbreak.

Sir KINGSLEY WOOD asked the Minister of Health whether there was any indication of a falling off in the extent of the outbreak of influenza, and whether he was taking any special steps to deal with the outbreak.—Mr. WHEATLEY replied: I am advised that it is not possible to predict with certainty the course of the present outbreak of influenza, but there are indications that its maximum incidence will be reached shortly. The disease appears generally to be of a mild type, and it has not been considered necessary to take any special emergency measures.

General Nursing Council Rules.

Dr. CHAPPLE asked the Minister of Health whether he was aware that applicants for registration under the Nurses Registration Act, 1919, amended by a rule passed in July, 1923, had been rejected on the ground that their applications should have been lodged before July 14th, 1923; and whether he would take the opinion of the law officers of the Crown as to the legality of this action of the General Nursing Council.—Mr. WHEATLEY replied: I am advised that the Council have no power to admit applicants for registration as existing nurses after July 14th, 1923, and I see no necessity for consulting the law officers of the Crown.

Dr. CHAPPLE asked the Minister of Health whether he had evidence that many hospital-trained nurses had failed to register under the Nurses' Registration Act, 1919, because of neglect to send in applications within the period prescribed by the Act; and, if so, would he consider an amending Bill extending this period.—Mr. WHEATLEY replied: There is no evidence that any appreciable number of trained nurses who desired to be registered failed to apply during the two years' period allowed by the Act; and I see no necessity for amending legislation.

Dried Milk Regulations.

Mr. LAMB asked the Minister of Health the reasons which led his department to modify and postpone the operation of the Public Health (Dried Milk) Regulations; what was the nature of the objections to these regulations that were regarded by his department as confidential; and why the representative organisation of dairy farmers in England and Wales was not permitted to learn the nature of the objections taken to the original draft regulations.—Mr. WHEATLEY replied: The Public Health (Dried Milk) Regulations were published in draft form in July last with a view to eliciting any representations which might be made by parties concerned for consideration in my department. A number of representations dealing with points of detail were made on behalf of manufacturers and traders, and my predecessor was satisfied that it was possible to meet some of them without prejudicing the interests of the consuming public, and that it would be impracticable to bring the regulations into operation at the date originally suggested. I am not aware whether the representations made were intended to be regarded as confidential, but it was not considered that there was any ground for communicating representations submitted for the consideration of the department to other bodies.

Condensed Milk Regulations.

Mr. LAMB asked the Minister of Health whether he was aware that the customs authorities had no power to hold up consignments of imported condensed milk, the labelling of which did not conform to the Public Health (Condensed Milk) Regulations; and whether, since such improperly labelled milk might reach the consumer before the local authority concerned was in a position to take action, what steps he proposed to take in the matter to safeguard the public health.—Mr. WHEATLEY replied: The answer to the first part of the question is in the affirmative. The ultimate procedure for the enforcement of the regulations is by prosecution, involving the liability to a substantial fine, and I see no reason to suppose that the arrangements adopted for enforcement will prove to be inadequate to secure the object in view.

Deaths from Infantile Paralysis.

Mr. BECKER asked the Minister of Health the number of children under the age of 7 years who died of infantile paralysis during the last 12 months; has his department any evidence showing that the high mortality amongst young children is due to the drinking of impure milk; and what steps does he propose to take to ensure a pure milk-supply.—Mr. WHEATLEY replied: I can best answer the first part of the question by giving the following provisional figures for deaths during 1923 of children under 7 years of age, registered as due to poliomyelitis and polioencephalitis: Poliomyelitis, 46; polioencephalitis, 20. The answer to the second part of the question is in the negative.

Salaries of Health Visitors.

Mr. JOHN HARRIS asked the Minister of Health whether seeing that the London District Council proposed that the salaries for inspectors and health visitors in London should be for sanitary inspectors £190 per annum, rising to £300 per annum, and health visitors £150, rising to £250 per annum, that his predecessor refused to agree to this scale, and that the subject was left in abeyance, what action His Majesty's Government proposed to take in the matter.—Mr. WHEATLEY replied: I have arranged to discuss the matter with representatives of the London District Council.

Spirochætosis among Miners.

Mr. CLARKE asked the Minister of Health if he was aware that a number of miners employed in East Lothian collieries had been seized with a disease, diagnosed by a professor in the Edinburgh Royal Infirmary as spirochætosis, a form of poison due to the presence of rats in the workings; and that all of them were seriously ill and several had died from its effects; and what steps was he taking to deal with the disease and the cause, which had created widespread alarm in the district.—Mr. STEWART (Under-Secretary of Health for Scotland) replied: The Scottish Board of Health are aware that an outbreak of infective jaundice has occurred in East and mid-Lothian; that the majority of those affected are miners; that within a year there have been 14 known cases, four of which resulted fatally. The bodies of three rats have been proved to be affected by the spirochætosis ictero-hæmorrhagica. By regulations of the Board, dated Feb. 4th, the disease has been made notifiable in the city of Edinburgh and in East and mid-Lothian, including the burghs in these counties. The local authorities of the areas affected have the matter under observation, and the Board of Health are in communication with the Board of Agriculture and the Mines Department Inspectorate.

The Tuberculosis Order, 1914.

Sir HENRY WEBB asked the Minister of Health whether he had reconsidered the decision of his predecessor as to the revival of the Tuberculosis Order of 1914; and, if so, when the order would be put into operation.—Mr. BUXTON (Minister of Agriculture) replied: I may explain that the question as to whether it is practicable to put into operation at the present time the Tuberculosis Order of 1914 is now under consideration. I hope to be able to come to a decision in the matter at an early date.

Panel Patients in Public Institutions.

Mr. THURTLE asked the Minister of Health whether he would take steps to amend the existing National Health Insurance Acts in such a way as to provide that when an insured person was admitted to a public institution for treatment the panel practitioner responsible for the case should be subjected to a reduction of his panel fee in respect of his failure to supply medical attention in accordance with his contract.—Mr. WHEATLEY replied: When an insured person is under treatment in an institution with a selected medical staff, which is not open to all general practitioners in the area, the obligation of the insurance practitioner to provide treatment ceases for the time being. The hon. Member is under a misapprehension in suggesting that in such cases there has been any failure on the practitioner's part to fulfil his contract, and I see no ground for reducing the capitation fee, in fixing which the limits of the obligation in regard to institutional treatment were taken into account.

Boards of Guardians and Insured Persons.

Mr. THURTLE asked the Minister of Health whether he was aware that, when persons insured under the National Health Insurance Acts were admitted to Poor-law hospitals for treatment, the boards of guardians concerned were precluded from receiving any benefits under these Acts in respect of the treatment so afforded; and whether he would take steps to have this restriction removed.—Mr. WHEATLEY replied: Boards of guardians have the ordinary powers of recovery of expenses incurred in providing treatment in a Poor-law hospital to a person insured under the National Health Insurance Acts, as in the case of all other persons for whom such treatment is provided. I do not think it either necessary or desirable that they should have any additional powers of recovery in the case of insured persons, and I would remind the hon. Member that any benefits to which such persons may be entitled under the National Health Insurance Acts are given in return for contributions compulsorily payable by themselves and their employers.

Houses Unfit for Habitation.

Mr. CECIL WILSON asked the Minister of Health the number of occupied houses which medical officers had reported as at present unfit for human habitation; how many persons were living in such houses; and the death-rate in regard to such houses.—Mr. WHEATLEY replied: According to statistics obtained from the reports of medical officers of health for the year 1922, 15,869 houses in England and Wales were found to be unfit for human habitation. Particulars are not available as to the number of persons living in these houses, or the death-rate in regard to such houses.

Suicide Statistics.

Mr. WRIGHT asked the Minister of Health if he could give the returns from the reports of the Registrar-General of the number of suicides per million of the population for each quinquennial period 1896–1900 to 1916–1920 inclusive.—Mr. WHEATLEY replied: The required figures for England and Wales are as follows:—

Period.	Rate per million population.
1896–1900	89
1901–1905	101
1906–1910	102
1911–1915	95
1916–1920	79

The figures given in respect of the years 1915–1918 relate only to civilian deaths and population.

THURSDAY, FEB. 21ST.

Ex-Service Men and Mental Disease.

Mr. PIELOU asked the Minister of Pensions if it was his intention to be responsible for the some 600 ex-Service men who were suffering from mental trouble who were at the moment under the care of the guardians.—Mr. F. O. ROBERTS replied: I assume that the hon. Member is referring to those ex-Service men for whose maintenance the responsibility of my department came to an end on Sept. 30th, 1922, under the expressed terms of Article 7 (2) of the Royal Warrant. The Government have decided to meet the charge for the maintenance from April 1st next of these men by means of a special exchequer grant which will not, however, fall on the vote of my department. I understand that Parliament will be asked to make the necessary provision in the votes of the Board of Control for England and Wales and General Board of Control for Scotland.

Pensions Medical Staff.

Mr. HOGGE asked the Minister of Pensions whether a large reduction of the medical staff of the Ministry was in contemplation; if so, on whose recommendation such reduction would be made; and whether he would consider withholding such reduction until the proposed departmental committee had considered the same and reported.—Mr. F. O. ROBERTS replied: Owing to the inevitable reduction of the work of my department, there is necessarily a corresponding decrease in the medical staff required. I am not contemplating any special reductions in the medical staff.

Lieut.-Colonel WATTS-MORGAN asked the Minister of Pensions the number of medical men employed at the Ministry headquarters in all grades in December, 1923; how many were over 60 years of age; and how many were engaged actually in the various theatres of war on active service.—Mr. F. O. ROBERTS replied: The number of medical men employed at Ministry headquarters on Dec. 31st last in all grades was 31, of whom three are over 60 years of age; 29 of these officers served during the war, 23 of them having served overseas.

The Use of Hashish.

Mr. GILBERT asked the Under-Secretary of State for the Home Department whether, seeing that hashish was not included in the list of dangerous drugs which were under restriction of importation into this country, he had any information of the use of this drug in certain seaport towns: and whether he proposed to take any steps to add this drug to the list of dangerous drugs and under the same restrictions as apply to them.—Mr. RHYS DAVIES replied: I have no information to show that indulgence in the use of hashish is anything but rare in this country, though it is possible it is practised to a certain extent among oriental seamen visiting our ports. Hashish is not one of the drugs to which the International Opium Convention of 1912 applies, though the Hague Conference recommended that its use should be investigated. Any proposal for the extension to hashish of the restrictions relating to the drugs included in the Convention would have to be considered from the international

standpoint, and I understand that the League of Nations, which by the Treaties of Peace is entrusted with the general supervision over the traffic in dangerous drugs, has not yet considered the question. The question is one in which other countries are more closely concerned than this country, but the position is being watched by my department, and, if it appears desirable, steps will be taken to raise the question before the Opium Advisory Committee of the League.

Supervision of Mentally Defective Children.

Lieut.-Colonel FREMANTLE asked the President of the Board of Education what steps, if any, were being taken for the supervision of mentally deficient children eligible for admission to special schools for whom accommodation in such schools was not available.—Mr. C. TREVELYAN replied: The board have been in consultation for some months past on this subject with representative bodies and persons concerned with the welfare of mentally defective children. They hope to issue a circular on the subject at an early date.

The Standard of Overcrowding.

Mr. ERNEST SIMON asked the Minister of Health whether, seeing that the standard of overcrowding generally adopted by medical officers of health was two persons per room, and that it was possible, without exceeding this standard, to have serious overcrowding and such conditions that elementary decency was impossible, he would instruct medical officers of health to adopt a new standard more in accordance with present-day opinion.—Mr. WHEATLEY replied: I am advised that the census figures as to families living under conditions of more than two persons per room have never been regarded by medical officers of health as other than a rough index of the prevalence and distribution of overcrowding conditions, and that there is general agreement among health officers that other considerations must be taken into account. As at present advised I do not think that any specific instruction to medical officers on this point is necessary or would serve any useful purpose.

Examination of School-children.

Mr. WINDSOR asked the President of the Board of Education if, in view of complaints received, he would issue instructions to medical officers that when examining school-children such examination should be in private, and that information with reference to the child's health and general condition should be private and confidential to the parents or guardian.—Mr. CHARLES TREVELYAN replied: It has been the consistent policy of the Board to insist that the medical inspection of school-children shall be conducted in private with the utmost regard for the feelings of the children and their parents. Moreover, in 1908, shortly after the inception of the School Medical Service, the Board instructed local education authorities that all entries of the results of inspection in each individual case must be regarded as confidential, and this instruction has been in force ever since. I am not aware of any complaints in this connexion, but I shall be quite ready to inquire into any cases in which it is alleged that the practice advocated by the Board has not been followed.

Cost of Relief.

Mr. CECIL WILSON asked the Minister of Health whether he could state for the years 1913–14 and 1922–23 the average cost per head of children in children's homes and children boarded out; the average cost per head of indoor relief in the case of the aged, the sick, the able-bodied, and the insane; and the average cost per head in asylums.—Mr. WHEATLEY replied: The average weekly cost per head in 1922–23 of children in separate establishments for children in England and Wales in respect of in-maintenance—i.e., for food, clothing, and necessaries, but excluding the cost of officers' salaries and rations, buildings, and loan charges—was, in those institutions for which separate accounts were kept, 8*s.* 8¼*d.* The average weekly cost per head of children boarded out in the same year was 10*s.* 9*d.* I regret that similar figures are not available for the year 1913–14. The average cost per head of indoor relief in the case of the aged, the sick, the able-bodied, and the insane, cannot be given separately for either of the years in question, but the average weekly cost per head for all classes of persons receiving indoor relief was, in the year 1913–14, 13*s.* 2¾*d.*, and in the year 1921–22, 31*s.* 0¼*d.* The average weekly cost per head for maintenance of patients in county and county borough mental hospitals in England and Wales was for the year 1913–14, 10*s.* 9½*d.*, and for the year 1922–23, 23*s.* 9¼*d.*

FRIDAY, FEB. 22ND.

Machine-skimmed Milk for Infants.

Commander BELLAIRS asked the Minister of Health, in view of the danger to infant welfare from the unfit food that was imported as machine-skimmed milk, whether he would consider proposals to prohibit the import by imposing a minimum fat standard.—Mr. WHEATLEY replied: Under the Public Health (Condensed Milk) Regulations, 1923, condensed machine-skimmed milk is required to be labelled as "unfit for babies." I see no reason for prohibiting its importation as I am advised that, though the removal of fat renders it unsuitable for feeding babies, it is not an unwholesome food and may properly be included in mixed dietaries.

MONDAY, FEB. 25TH.

Plight of the Hospitals.

Mr. MARCH asked the Minister of Health whether his attention had been called to the straitened circumstances of many hospitals; and whether he was prepared to introduce a comprehensive health system on a national basis, in order to cope with the demand for treatment and remove the need for charitable support.—Mr. A. GREENWOOD replied: The position of the voluntary hospitals, though it is still difficult, has greatly improved since the report of Lord Cave's Committee. The proposal contained in the second part of the question is one with which my right hon. friend has some sympathy, but it raises far-reaching issues, both medical and financial, and he is not at present prepared to give any undertaking as to it.

Industrial Diseases.

Mr. CLARKE asked the Minister of Health if, in view of the fact that spirochætosis ictero-hæmorrhagica had now been made a notifiable disease by regulation of the Board, he would consider the advisability of having it included under the industrial diseases clause of the Compensation Act.—Mr. RHYS DAVIES (Under-Secretary to the Home Office, who replied), said: I understand that this disease is not notifiable in England, but that as a result of a recent outbreak in East Lothian it has been made notifiable in Scotland by an Order of the Scottish Board of Health. Before the disease can be scheduled under the Workmen's Compensation Act it must be shown to be due to the nature of some employment, and to be so specific to that employment that its origin can be established in individual cases. On my present information the disease in question would not appear to come within this category, but I shall be prepared to consider the point further when I have obtained a fuller report.

TUESDAY, FEB. 26TH.

National Insurance.

Lord HENRY CAVENDISH-BENTINCK asked the Prime Minister whether he was prepared to extend the terms of reference of the promised Royal Commission on National Health Insurance to cover the whole field of a general social insurance, designed to provide security to the worker and his dependents in cases of industrial accidents, industrial diseases, non-industrial accidents, ill-health, maternity, unemployment, old age, blindness, burial, unprovided widowhood, and unprovided orphanhood.—Mr. CLYNES replied: I do not think it would be desirable to extend the terms of reference of the proposed Royal Commission in the manner suggested by the noble lord. There is ample material for investigation within the limits proposed. The better coördination of the various social services is a separate matter which is receiving consideration.

Poor-law Vaccination.

Mr. BROMFIELD asked the Minister of Health if he would state what was the cause of the increase in expenditure on vaccination by Poor-law authorities in England and Wales during the year 1920–21 as compared with the previous year, the respective figures being £174,927 and £124,018.—Mr. A. GREENWOOD replied: The increase in expenditure on vaccination by Poor-law authorities during the year 1920–21, as compared with the previous year, was mainly due to the increase in the number of births and the consequent increase in the number of children vaccinated by public vaccinators during 1920 as compared with 1919.

THE HOSPITAL SYSTEM OF DUBLIN.—The President of the Royal College of Surgeons in Ireland (Sir W. I. de C. Wheeler), in a speech at a public dinner last week, made some severe criticisms on the Dublin hospital system. It was probably, he said, the worst in the world. There were 12 or 14 small hospitals, many of them built 200 or 300 years ago, and used in the heart of the slums, in the worst possible situation as far as the sick were concerned. If he had had any influence with the contending parties a few years ago, he would have asked them to give time to remove the patients and then to blow up the hospitals. It would have been a real benefit to Ireland, and new buildings on the Edinburgh system, would have cost only about half a million. Our Dublin correspondent adds: Though most thoughtful people will agree that the needs of Dublin could be better served by one or two large hospitals than by 12 small ones, nevertheless the President's strictures appeal somewhat severe. Of hospitals, as of forms of government, it is sometimes true that "whatever is best administered is best."

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—R. D. Jones, Edinburgh; W. McLaren, Durham; and H. J. Powell, St. Mary's Hosp.

Medicine.—J. B. Sweet, Glasgow.

Forensic Medicine.—R. Caplan, Glasgow; L. K. Htoe, London; E. G. R. Mac Mahon, St. Thomas's Hosp.; M. S. Mahmud, St. Mary's Hosp.; W. McLaren, Durham; I. Morgan, St. Mary's Hosp.; and A. M. Shawket, Liverpool.

Midwifery.—R. Hare, St. Mary's Hosp.; F. James and R. Schofield, Guy's Hosp.; and R. D. Marett Tims, Cambridge and St. Thomas's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: R. Caplan, M. S. Mahmud, W. McLaren, H. J. Powell, and J. B. Sweet.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Council meeting held on Feb. 14th the diploma of Member was granted to the following candidates who have passed the requisite examinations and have complied with the by-laws:—

R. D. Alexander, Cambridge and St. Thomas's; C. F. Ashby, St. Bart.'s; J. Atkin, Guy's; N. F. Azer, Cairo and Charing Cross; R. C. Baxter, Charing Cross; H. P. Baylis, Guy's; J. Bee, London; E. R. Bennion, Westminster; Muriel E. Binns, Royal Free; C. E. W. Bower, Manchester; M. A. B. Brito-Mutunayagam, Ceylon and St. Thomas's; W. Brockbank, Cambridge and Manchester; R. W. Brookfield, Liverpool; W. G. S. Brown, Cambridge and St. Bart.'s; R. E. D. Cargill, Oxford and St. Bart.'s; H. D. Chalke and J. H. H. Chataway, St. Bart.'s; Nora Cheney, King's Coll.; R. Chester, Leeds; W. Clark, Charing Cross; G. D. Clarke, London; R. G. Cochrane and T. S. Cochrane, St. Bart.'s; P. S. Connan, King's Coll.; A. M. Cooke, Oxford and St. Thomas's; Rosemary Cooke, Cambridge and Charing Cross; S. S. Cruden, St. Bart.'s; D. E. Cuffey, Cambridge and King's Coll.; E. R. Cullinan, St. Bart.'s; Vera Cullwick, Birmingham; C. H. C. Dalton, Cambridge and St. Bart.'s; A. F. D. Darlington, Cambridge and St. Thomas's; A. B. Davies, Guy's; J. H. T. Davies and P. O. Davies, Cambridge and St. Bart.'s; T. Davies, St. Bart.'s; Dorothy L. C. Day, London; A. M. Deane, St. Thomas's; J. S. Dees, Middlesex; A. De Souza, Cambridge and Middlesex; G. P. Driver, St. Bart.'s; W. H. Dunn, St. Thomas's; Winifred P. Edmunds, King's Coll.; Barbara J. Edwards, Birmingham; J. Elgood and G. Elliot, St. Bart.'s; V. H. Ellis, London; A. C. M. Elman, Univ. Coll.; T. J. Evans, Middlesex; E. K. A. Firth, St. Thomas's; T. F. Fox, Cambridge and London; E. S. Frischmann, Manchester; M. W. M. Gadrat, Paris; P. Garson, St. Bart.'s; W. H. George, London; H. M. Golding, Bristol; H. P. Goldsmith, Univ. Coll.; W. Gough and F. E. Gould, Birmingham; A. W. Grace, Univ. Coll.; H. Graf, Liverpool; F. H. K. Green, St. Bart.'s; C. W. Greenway, Guy's; R. J. Gregory, St. George's; W. E. Grice, Middlesex; A. B. Griffiths, Liverpool; G. J. Griffiths, Middlesex; R. D. Gross, Guy's; S. A. Gunter, St. Bart.'s; J. A. E. M. Hadley and L. W. Hale, Univ. Coll.; C. S. Hallpike, Guy's; J. G. Hamilton, London; I. E. Harries, Guy's; K. E. Harris, Cambridge and Univ. Coll.; A. W. Hart Perry, St. Bart.'s; R. C. Hatcher, Bristol; Leila M. Hawksley, Royal Free; L. I. Henzell, Univ. Coll.; J. C. W. Hewetson, Guy's; Gabrielle M. Highfield-Jones, Charing Cross; E. W. Hicks, St. Thomas's; H. A. Hirst, London; J. A. Hislop, Durham; S. A. Holford, Middlesex; J. Holmes, Cambridge and St. Bart.'s; A. Hooper, Leeds; Gwynedd Hugh-Jones and Kathleen M. Hyslop, Royal Free; Ethel J. Isaacs, Westminster; S. P. Jacobson, Guy's; H. Jaffe, Manchester; T. G. I. James, Cardiff; J. W. W. Jepps, Cambridge and St. George's; A. T. Jones and W. Jones, Univ. Coll.; P. C. Joscelyne, Bristol; A. A. Khair, St. Bart.'s; E. F. King, Bristol; S. W. M. King, St. Bart.'s; Charlotte A. Kingdon, St. Mary's; F. Langford, Bristol; A. L. Lankester, Cambridge and St. Thomas's; N. E. Laurence and D. E. Lawrence, St. Bart.'s; H. B. L. Levy, Durham; Geraldine N. Longford, St. Mary's; G. Lucas, London; Kathleen M. Lyons, Univ. Coll.; R. R. Macintosh and N. W. MacKeith, Guy's; J. R. A. Madgwick, London; Doris I. Mart, Univ. Coll.; Lucy M. T. Masterman, St. Mary's; M. Meyers, St. Bart.'s; H. S. Morley, Univ. Coll.; S. W. H. Moul, Charing Cross; R. T. Mummery, Cambridge and St. Mary's; C. A. Nadicarianda, London; B. S. Nat, St. Andrews; E. E. Neser, Guy's; J. W. Newbold, Univ. Coll.; I. Newton, Charing Cross; C. P. O'Brien, St. Bart.'s; F. W. Oldershaw, London; R. D. Owen, Guy's; R. Owen-Jones, Middlesex; Lucy Parker, Royal Free; G. W. V. Parry, T. G. W. Parry, and W. F. Payne, Guy's; P. R. Peacock, Middlesex; Betsy Porter, Royal Free; Louisa M. Poynder, Charing Cross; T. M. Preece, Cambridge and St. Bart.'s; E. A. B. Pritchard, Cambridge and Univ. Coll.; Evelyn R. Pyke, London; S. A. H. Qureshi, St. George's; A. J. Reed, London; Laura M. Rhodes, St. Mary's; R. L. Rhodes, Cambridge and St. Bart.'s; O. F. W. Robinson, King's Coll.; M. Rockfelt, Univ. Coll.; M. Rose, Middlesex; E. J. H. Roth, St. Bart.'s; S. C. Rowbotham and M. Rubinstein, Guy's; E. Rudge, Cambridge and St. Bart.'s; R. W. Savage, St. Bart.'s; Margaret B. Savory, Univ. Coll.; R. W. Scarff, Middlesex; F. L. Scott, King's Coll.; E. C. Seward, Guy's; C. J. L. Sharp, Cambridge and London; H. Sheard, Leeds; J. Silver, Middlesex; F. A. H. Simmonds, Cambridge and St. Bart.'s; A. S. Simpson and A. E. Slinger, King's Coll.; G. F. Smith, Middlesex; N. Smith, Cape and St. Bart.'s; J. A. Smoritt, Leeds; Beatrice M. Smyth, Cambridge and London; S. Snelson, Manchester; W. R. Spurrell, Guy's; R. H. Stanbridge, London; R. S. Starkey, Cambridge and St. Thomas's; E. G. Stecler, St. George's; W. Stephenson, Durham; J. D. M. Stewart, Cambridge and St. Bart.'s; Viva E. K. Stuart, Royal Free and St. Mary's; Edith C. Summerskill, Charing Cross; H. H. D. Sutherland, St. Bart.'s; T. R. Sutherland, Cambridge and St. Bart.'s; Annie D. Symons, Royal Free; A. K. Thomas, Univ. Coll.; W. E. C. Thomas, Cardiff; K. W. Thorp, Cambridge and St. Thomas's; R. W. H. Tincker, St. Bart.'s; H. S. Townsend, King's Coll.; B. D. Underwood, London; H. C. Van Dort, Ceylon and Middlesex; D. C. Vaughan, Manchester; H. F. Walker, Middlesex; S. A. Walker, Liverpool; Dorothy A. Waterfield, London; E. R. Weaver-Adams, Cambridge and St. Thomas's; Elizabeth N. Wells, Charing Cross; H. J. W. J. Westlake, Guy's; H. A. M. Whitby and H. B. White, St. Bart.'s; Fanny M. Whittaker, Charing Cross; G. W. Wigg, Durham; Cicely F. Wilson, Bristol; A. W. Wood, Birmingham; Constance A. P. Wood, King's Coll.; and S. C. H. Worseldine, Guy's.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Part I. (*including Forensic Medicine and Toxicology*).—Arthur F. Alford, Kenneth F. Alford, David H. Beatson, Elizabeth E. Benson, Harry W. Brassington, Dorothy E. Crellin, Sidney J. H. Griffiths, Constance I. Ham, Frederick H. Hollingshead, John A. Hooker, Charles T. Hyatt, Arthur H. Lowther, Rosalie E. Lucas, Cecil P. Porter, David C. Prowse, Lennox G. Robertson, Herbert Rogers John F. Southward, Gertrude M. Terrell, Maria M. Tewater, Thomas W. Ware, and Kathleen M. Willmore.

Part I. only.—Gilbert M. Minifie.

Part II. (*completing Examination.*)—John A. James (first-class honours), Arthur P. Bodman and Herbert Taylor (second-class honours), Naomi J. Bown, Gilbert B. Bush, William L. Cossham, Frank R. Edbrooke, Norman J. England, Herbert M. Golding, Rowland C. Hatcher, Alexander G. Heron, Frederick G. Jenkins, Muriel V. Joscelyne, Patrick C. Joscelyne, Eric C. K. Kenderdine, Edgar F. King, Carrie H. Osmond, and Robert A. Sammons.

SECOND PROFESSIONAL EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

Sydney Phillips.

In Dental Mechanics and Dental Metallurgy only.—Christopher S. Cossham.

EXAMINATION FOR DIPLOMA IN PUBLIC HEALTH.

In Part I. only.—Eric G. Don.

FINAL EXAMINATION FOR DEGREE OF B.D.S.

Edgar K. Tratman.

FINAL PROFESSIONAL EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

Reginald G. Downes, George J. Kelly, and Brenda F. Taylor.

The degree of M.D. has been conferred on Mr. Macdonald Critchley for a dissertation on the Parathyroids and Calcium Metabolism.

HUNTERIAN SOCIETY.—The Hunterian oration on the Changing Standpoints in Cardiac Medicine will be delivered by Sir Sydney Russell-Wells on March 3rd at 9 P.M. at the Mansion House. A discussion will follow, to be opened by Dr. J. Strickland Goodall and Dr. B. H. Parsons-Smith.

RONTGEN SOCIETY.—A general meeting will be held on March 4th at 8.15 P.M. in the Institution of Electrical Engineers, Savoy-place, Victoria Embankment, London, W.C., when a paper on Hard and Soft Tubes in the Technique of Radiography, with a practical demonstration, will be read by Mr. N. E. Luboshez. The seventh Silvanus Thompson Memorial Lecture will be delivered by Prof. C. G. Barkla, F.R.S., at a general meeting of the society to be held at the Institution of Electrical Engineers on April 1st.

LONDON SCHOOL OF TROPICAL MEDICINE.—The Langley prize of about £30 will be awarded this year. This prize is open to competition among officers of the West African Medical Staff, whether on the active or retired list. The award will be made in respect of the best paper written on one of the following subjects: (*a*) Tropical Medicine or Surgery. (*b*) Tropical Hygiene and Sanitation. (*c*) Tropical Entomology and Parasitology. Papers should be delivered to the Secretary, Seamen's Hospital Society, Greenwich, London, S.E., on or before Oct. 1st, 1924.

RIVERS MEMORIAL FUND.—Friends and admirers of the late W. H. R. Rivers who have not yet subscribed, or by inadvertence have not been invited to subscribe, to this fund are asked to communicate with the treasurer, Dr. L. E. Shore, St. John's College, Cambridge. Subscribers are invited to attend a meeting which will be held at the rooms of the Royal Society, Burlington House, at 4 P.M. on March 25th, in order to decide on the form which the memorial should take.

Dr. Hugh Thursfield has succeeded Sir Dyce Duckworth as hon. consulting physician to the St. John's Foundation School, Leatherhead, for Sons of Poor Clergy.

THE Wellcome Museum of Tropical Medicine and Hygiene at 25–27, Endsleigh-gardens, London, N.W. 1, will be closed from March 1st until further notice, as it is proposed considerably to enlarge the museum.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The Charter Day dinner will be held in the College Hall, St. Stephen's Green, West Dublin, on Saturday, March 1st, at 7.30 P.M., when the principal guest will be H.E. the Governor-General.

THE LATE DR. E. J. DICKINSON.—Elmer John Dickinson, who died at Pietermaritzburg, Natal, on Feb. 4th, aged 37, was born in Canada, graduating M.D. at Winnipeg University in 1916. During the war he served with distinction as a captain in the Canadian Royal Army Medical Corps, gaining the Military Cross and the Croix de Guerre with palms. Although he had been but three years in Natal, his ability and genial personality had enabled him to build up a large practice in Pietermaritzburg.

OXFORD UNIVERSITY PRESS.—To celebrate its moving from Amen Corner into Warwick-square, the Oxford University Press is holding a luncheon on Tuesday, March 4th, at the new building. The Marquess Curzon, Chancellor of Oxford University, will preside, and the Archbishop of Canterbury and Mr. Asquith will propose the toast of the University. In his reply, Lord Curzon will propose the toast of the University of Cambridge, whose Chancellor, Lord Balfour, will reply.

METRIC SYSTEM IN U.S.A.—It is reported that a Metric Standards Bill, providing for gradual adoption in the United States of the metric units of weights and measures in commerce, has been brought before the House of Representatives and the Senate. According to the provisions of the Bill, the buying and selling of goods, wares, and merchandise will be in terms of the metric units after a period of ten years.

BRITISH SCIENCE GUILD.—A science news service has been inaugurated by the Guild with the object of providing in the lay press a weekly signed article dealing with some subject of special interest and a weekly column of science notes. It will also furnish reports of scientific progress. Scientific workers prepared to act as correspondents for the laboratories in which they are working are requested to communicate with Mr. Gordon D. Knox, 2, Guilford-street, London, W.C. 1.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The Royal Northern Hospital has arranged, in conjunction with the Central London Ophthalmic Hospital, the North-Eastern Fever Hospital, and the Royal Chest Hospital, to give a two weeks' intensive course, including all the general and special departments of medicine and surgery, from March 3rd to March 15th. Two afternoon sessions will be at the Central London Ophthalmic Hospital, one at the Royal Chest Hospital, and one morning session at the North-Eastern Fever Hospital. Apart from these demonstrations at other hospitals all the work will be undertaken by the members of the staff at the Royal Northern Hospital, and will include demonstrations of clinical methods and cases, lecture-demonstrations, and work in the wards and out-patient department from 10.30 to 5.30 each day. A special course in gynæcology will take place at the Chelsea Hospital for Women from March 3rd to March 28th. Clinical demonstrations and lectures will be given in the wards and out-patient department to be followed by lectures or operations in the theatre. Dr. Porter Phillips and Dr. Thomas Beaton will give a series of lecture-demonstrations in psychological medicine at Bethlem Royal Hospital from March 8th to April 5th. The demonstrations will be given on Thursdays and Saturdays at 11 A.M., and will deal with diagnosis and symptomatology of mental diseases, the psycho-neuroses, and the medico-legal aspects of insanity. Also a series of six lecture-demonstrations dealing with recent advances in medical electrical treatment will be given by Dr. C. B. Heald at the Royal Free Hospital on Wednesdays at 5.30 P.M. from March 5th to April 9th. A course on diseases of children has been arranged by the Royal Waterloo Hospital for Children and Women from March 17th to April 5th. The course will include lecture-demonstrations, ward work, out-patient cliniques each day from 2 o'clock onwards. Copies of the syllabus, with full particulars of the above courses and the fees payable for each course can be obtained on application to the secretary to the Fellowship of Medicine, at 1, Wimpole-street, London, W.

EDINBURGH: ROYAL MEDICAL SOCIETY.—The annual dinner of this Society was held on Feb. 21st in the Hall of the Royal College of Surgeons, Edinburgh. About 130 members were present and the guests included Prof. Gulland, Prof. Harold Stiles, Sir Robert Philip, Mr. J. Condie Sandeman, K.C. (Dean of the Faculty of Advocates), Sir Leslie Mackenzie, Prof. W. P. Patterson, D.D., Sir Byron Bramwell, and Sir J. Balfour Paul. Sir George Newman, as the guest of the evening, spoke of the future of medicine and its ever-extending rôle in the development of civilisation. He paid a generous tribute to the notable part played by the medical schools of Edinburgh, forming a great and imperial university, in furthering the art and science of medicine. Sir Harold Stiles, in replying to the toast of the Edinburgh Medical School, expressed the hope that more money would be available for preventive work along which lines the future of medicine must lie.

THE LATE DR. J. W. MULLEN.—The death of John William Mullen, L.R.C.S. & P. Irel., took place on Feb. 17th, at Ladywell Sanatorium, Pendleton, in his sixty-seventh year. A native of Dublin, Dr. Mullen was educated at Bective College, after obtaining his medical qualifications at the Royal Colleges of Surgeons and Physicians of Ireland. He went to Manchester, and at the age of 24 was appointed to the Wilton Fever Hospital, Salford, which was then of small dimensions. There he remained until the erection about 20 years ago of the Ladywell Sanatorium, an institution to which he devoted all his energies. Dr. Mullen held the position of medical superintendent of the Salford Corporation Hospitals for 43 years, and under his guidance and unselfish devotion to the Ladywell Sanatorium it became a model of its kind. Dr. Mullen is survived by a widow and daughter.

SUSSEX MATERNITY AND WOMEN'S HOSPITAL.—In future the Brighton and Hove Hospital for Women will be known by this name. The change of title was unanimously agreed upon at the annual meeting of the governors on Feb. 13th, when it was explained that the alteration was desirable owing to the confusion existing between the hospital and the institution in the town known as the New Women's Hospital. Owing to recent legislation the hospital had had to take in a large number of cases for the local authorities of a class which they did not previously deal with, and this had been one of the factors which had actuated the governors to take larger premises last year. The scheme for fitting up vacant rooms as wards for private patients paying full fees had been proceeded with, and the accommodation in this respect was nine beds, a private labour ward, a bathroom, and an office. Practitioners sending patients into these wards may attend them there should they so desire. Dr. R. D. Smedley, medical officer of health for West Sussex, in a short address on maternity work, warmly acknowledged the coöperation and the facilities for treatment granted by the hospital so readily eight years ago to the West Sussex County Council upon the inauguration of its maternity and child welfare work. With the increased accommodation the in-patients during 1923 numbered 614, as compared with 387 in 1922. Of these 234 were midwifery cases undertaken for the local authorities. The work on the district had been less by some 200 cases, which the governors attributed to the fall in the birth-rate. Out-patients increased from 648 to 676. Lady Burrell was elected President in succession to Lady Leconfield.

Appointments.

HUNT, E. R., M.D., B.C. Cantab., M.R.C.P. Lond., has been appointed Honorary Consulting Physician to the Haywards Heath Hospital.

JENNINGS, H. C., M.B., B.S., D.P.H., Temporary Medical Officer of Health to the Holland County Council.

Certifying Surgeons under the Factory and Workshop Acts: BUCHANAN, R. F. C. H., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg. (Coniston); LINDSAY, A., M.B., Ch.B. Glasg. (Nantgaredig); HENDERSON, J. M., M.B., Ch.B. Edin. (Greenlaw).

Vacancies.

For further information refer to the advertisement columns.

Bath Ear, Nose and Throat Hospital, Marlborough Buildings.—Hon. Pathologist.

Birmingham, Highbury, Uffculme and Sorrento Hospitals.—Med. Supt. £800.

Bradford Children's Hospital.—H.S. £125.

Cardiff, King Edward VII Welsh National.—Asst. R.M.O.'s, £375 and £250 respectively.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. £75.
Charing Cross Hospital, W.C.—Asst. Obstet. P.
Doncaster Royal Infirmary.—Sen. H.S. £200.
Exeter, Royal Devon and Exeter Hospital.—H.P. £150.
Federated Malay States, Central Mental Hospital.—Asst. Med. Supt. £616.
Gordon Hospital for Rectal Diseases, Vauxhall Bridge-road, S.W.—Anæsthetist.
Halifax Royal Infirmary.—Hon. Ophth. S. and Hon. Radiologist.
Hertford County Hospital.—Hon. Asst. S.
Hoo Rural District.—Part time M.O.H. £60.
Leeds City.—Asst. M.O.H. £750.
Leicester City Education Committee.—Asst. Sch. M.O. £600.
London Homœopathic Hospital, Great Ormond-street, W.C.—Third Anæsthetist. £50.
Manchester, Royal Children's Hospital, Pendlebury.—Res. Surg. O. £80.
Manchester Victoria Memorial Jewish Hospital.—Res. M.O. £250.
Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—H.S. £150. Also Clin. Assts.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. £150.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. P.
Newcastle-upon-Tyne Hospital for Sick Children.—Jun. R.M.O. £120.
Newcastle-upon-Tyne, University of Durham College of Medicine.—Lectureship on Med. Jurisprudence.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Two Asst. Res. M.O.'s. Each £80. Also Sen. R.M.O. £100.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.P. and H.S. Each £100.
Richmond, Royal Hospital, Surrey.—Asst. H.S. £100.
Royal Ear Hospital, Dean-street, Soho, W.—Hon. Anæsthetist.
Royal Free Hospital, Gray's Inn-road, W.C. H.S.
Royal Northern Hospital, Holloway, N.—M.O. to Out-Patients. £150.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W.—H.S. £150.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. £200.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. £75.
St. Thomas's Hospital.—Ophth. S.
Salford Royal Hospital.—Res. M.O. £175. Three H.S.'s and Cas. H.S. Each £125.
Sheffield Royal Infirmary.—Asst. Cas. O. £60.
Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.
Sunderland Royal Infirmary and Children's Hospital.—Vistg. M.O. for X Ray, &c., Dept. £400.
University College Hospital Medical School.—Graham Scholarship in Pathology.
West London Hospital, Hammersmith-road, W.—One H.P. and Two H.S.'s. Each £100.

Births, Marriages, and Deaths.

BIRTHS.

BIGGER.—On Feb. 24th, at Brackenhurst, Walton-on-Thames, the wife of W. G. Bigger, M.B., B.Ch., of a son.
BRAIMBRIDGE.—On Feb. 10th, at Wigmore-street, W., the wife of Dr. C. V. Braimbridge, Kenya Medical Service, of a son.
CARLISLE.—On Feb. 17th, at "Ardlair," Heswall, Cheshire, the wife of H. G. Carlisle, M.D., of a daughter.
CRAMER.—On Feb. 14th, at The Pryors, Hampstead, the wife of Dr. William Cramer, of a son.
FOWLER.—On Feb. 22nd, at Pinewood, Wokingham, Berks, the wife of William C. Fowler, M.D., B.S. Lond., of a son.
GREENWOOD.—On Feb. 23rd, 1924, at 55, Crouch Hall-road, Crouch End, N. 8, the wife of A. Atkins Greenwood, M.B., B.S., M.R.C.S., L.R.C.P., of a daughter.
HEBERT.—On Feb. 24th, at Wigmore-street, the wife of G. T. Hebert, M.D., of a daughter.

MARRIAGES.

ROBB—WALLACE.—On Feb. 21st, in London, Captain Campbell Robb, R.A.M.C. (retired), to Marjorie Macneil Wallace, elder daughter of the late Alexander Scott, M.D., of Glasgow.

DEATHS.

ASTIN.—On Feb. 19th, at Gwylfa, Maerdy, Corwen, suddenly, Wilson Astin, M.B., C.M., aged 60 years.
BATE.—On Feb. 20th, of pneumonia, at Millbank Hospital, Colonel A. L. F. Bate, C.M.G., A.M.S.
BOND.—On Feb. 20th, at Torquay, of pneumonia, William Arthur Bond, M.D., F.R.C.P. (late M.O.H., Holborn), aged 67 years.
LANSDOWN.—On Feb. 17th, at Oakfield-road, Clifton, Bristol, Robert Guthrie Poole Lansdown, M.D., B.S., M.R.C.S., L.R.C.P., aged 60 years.
MACNAIR.—On Feb. 16th, in a nursing home, London, Alfred Duncan Macnair, M.D. Glasg., The Grange Drive, Winchmore Hill, N.
ROSS.—On Feb. 19th, at Porchester-road, Bournemouth, Daniel McClure Ross, M.D., F.R.C.S., in his 75th year.
SPURGIN.—On Feb. 15th, at Dallington, Northampton, Herbert Branwhite Spurgin, M.R.C.S. Eng., L.S.A. Lond., aged 81 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

THE ROYAL SOCIETY.
THURSDAY, March 6th, at 4.30 P.M.—*Papers to be read:* E. D. Adrian, F.R.S. and Sybil Cooper: The Electric Response in Reflex Contractions of Spinal and Decerebrate Preparations. A. Fleming: A Comparison of the Activities of Antiseptics on Bacteria and on Leucocytes. (Communicated by Sir Almroth Wright, F.R.S.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 3rd.

TROPICAL DISEASES AND PARASITOLOGY: at 8.30 P.M.
Paper:
Lieut.-Colonel R. McCarrison, I.M.S. (Pasteur Institute of Southern India): Rice in Relation to Beri-beri in India.
N.B.—Members of the Sections of Medicine, Pathology, and Therapeutics and Pharmacology are specially invited to attend this meeting.

Tuesday, March 4th.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Cases:
Mr. Laming Evans: Cases of Congenital Hemiplegia in Similar Twins.
Mr. Bernard Roth: (1) Bony Ankylosis of Elbow, (2) Fractured Clavicle treated by Sayre's Method with Resulting Paresis.
Mr. S. L. Higgs: Specimen of Congenital Absence of Sacrum.
Cases will also be shown by Mr. McCrae Aitken, Mr. R. C. Elmslie, and Mr. Gordon Pugh.
PATHOLOGY: at 8.30 P.M. At the Lister Institute, Chelsea-gardens, S.W.
Communications:
Dr. S. P. Bedson and Dr. M. E. Johnston: Further Observations on the Genesis of Platelets.
Mr. H. Schütze: Results of treating Tuberculous Guinea-pigs with Diaplyte Vaccine.
Dr. J. A. Arkwright and Mr. A. N. Goyle: The Relation of "Rough" and "Smooth" Variants to the "O" and "H" Forms of Weil and Felix.
Mr. M. L. Cowan: Experimental Production of Immunity to Streptococci in Rabbits.
Dr. E. E. Atkin: A Comparison of Meningococcal and Gonococcal Colonies on a Special Medium.

Wednesday, March 5th.

MEDICINE, SURGERY, THERAPEUTICS AND PHARMACOLOGY: at 5.30 P.M. (to be adjourned to 8.30 P.M. if necessary).
Joint Discussion on
The Treatment of Severe Gastric and Duodenal Hæmorrhage, Mr. Cyril A. R. Nitch (President of the Section of Surgery) in the chair.
Speakers:
Surgical: Mr. H. J. Paterson (opener), Mr. A. H. Burgess, Mr. R. P. Rowlands, Mr. G. Gordon-Taylor.
Medical: Sir William Willcox, Dr. A. Hurst, Dr. Izod Bennett.
Therapeutical: Dr. P. Hamill.

Thursday, March 6th.

BALNEOLOGY AND CLIMATOLOGY: at 5.30 P.M.
Paper:
Dr. J. Burt: On the Causes of Brachialgia.
STUDY OF DISEASE IN CHILDREN, NEUROLOGY, OBSTETRICS AND GYNÆCOLOGY, ORTHOPÆDICS: at 8 P.M.
Joint Discussion on
Birth Injuries, with Special Reference to Intracranial Injuries with Hæmorrhage, and to Nerve Injuries.
Opener: Mr. Eardley Holland (Obstetrics and Gynæcology).
Other Speakers: Dr. Collier (Neurology), Mr. Fairbank (Orthopædics), Dr. Cameron (Study of Disease in Children).

Friday, March 7th.

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.)
Discussion on
Suppurative Diseases of the Frontal, Ethmoidal, and Sphenoidal Sinuses.
Illustrative cases will be shown.
The following have promised to take part in the Discussion: Mr. Herbert Tilley, Sir StClair Thomson, Sir William Milligan, Mr. E. Watson-Williams, Mr. Logan Turner, Dr. P. Watson-Williams, Dr. W. T. Gardiner.
ANÆSTHETICS: at 8.30 P.M.
Paper:
Prof. Storm van Leeuwen (Professor of Pharmacology, University of Leyden): The Anæsthetic Properties of the Purest Ether: Ether of Crystallisation.
N.B.—Members of the Section of Therapeutics and Pharmacology are specially invited to attend this Meeting.

Saturday, March 8th.

OTOLOGY: at 10 A.M. (Cases at 9.15 A.M.)
Cases and Specimens:
Mr. Richard Lake: (1) Case of Vertigo, probably Central in Origin; (2) (with Dr. E. A. Peters) a Thick Flap for the Partial Lining and Diminution of Too Large

Mastoid Cavities; (3) Forceps for Use in Tonsillar Dissection.
Dr. Collier (introduced by Mr. Richard Lake): (1) Abscess of Lateral Sinus: (2) Cerebral Abscess.
Cases will also be shown by Sir James Dundas-Grant, Dr. Dan McKenzie, Mr. T. B. Jobson, and others.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
WEDNESDAY, March 5th.—9 P.M., Dr. R. A. Young: The Treatment of Pulmonary Tuberculosis. (Second Lettsomian Lecture.)

HUNTERIAN SOCIETY.
MONDAY, March 3rd.—9 P.M. (at The London Mansion House). Sir Sydney Russell-Wells: Changing Standpoints in Cardiac Medicine. (Hunterian Oration.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, March 3rd, to Saturday, March 8th.—BETHLEM ROYAL HOSPITAL. Course in Psychological Medicine: Sat., 11 A.M., Dr. Porter Phillips: Diagnosis and Symptomatology of Mental Diseases.—CHELSEA HOSPITAL FOR WOMEN. Daily: Operations, &c. Mon., 2 P.M., Mr. Giles; Tues., 5 P.M., Mr. Bonney: Mechanism of Genital Displacement; Wed., 2 P.M., Mr. Gallctly: Case-taking. Demonstration in Wards: 4 P.M., Mr. Ellison: Pelvic Pain; Thurs., 2 P.M., Mr. Giles: Obstetrics and Gynæcology in Relation to the State: Fri., 2 P.M., Mr. Banister: Disorders of Micturition.—ROYAL FREE HOSPITAL. Wed., 5.30 P.M., Dr. Heald: The Diathermy Current—Its Uses and Applications.—ROYAL NORTHERN HOSPITAL, in conjunction with the CENTRAL LONDON OPHTHALMIC HOSPITAL, NORTH-EASTERN FEVER HOSPITAL, and ROYAL CHEST HOSPITAL. Special Intensive Course (first week), as per Syllabus.
Further particulars can be obtained from the office at 1, Wimpole-street, W. 1.

WEST LONDON POST-GRADUAT E COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, March 3rd.—10 A.M., Surgical Registrar: Surgical Pathology. 2 P.M., Dr. Scott Pinchin: Medical Outpatients. 2 P.M., Mr. Simson: Diseases of Women.
TUESDAY.—12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards. 2.30 P.M., Dr. Pritchard: Medical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—10.30 A.M., Dr. Pritchard: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Banks-Davis: Diseases of Throat, Nose and Ear.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Prince of Wales's General Hospital).
(At 4.30 P.M.)
(Open to Members of the College only.)
MONDAY, March 3rd.—Mr. Aubrey Goodwin: Retroversion.
TUESDAY.—Mr. C. H. Hayton: Septic Sinus Thrombosis of Otitic Origin.
THURSDAY.—Mr. J. Bright Banister: Prolapse.
FRIDAY.—Dr. L. R. Yealland: Clinical Demonstration of Cases.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
TUESDAY, March 4th.—5 P.M., Dr. Whitfield: Lichen Planus.
THURSDAY.—5 P.M., Dr Fox (Chesterfield Lecture): Cutaneous Syphilis.

ST. THOMAS'S HOSPITAL, Albert Embankment, S.W.
(In the Governors' Hall.)
THURSDAY, March 6th.—5 P.M., Dr. J. A. Murray: Cancer. (Third Lecture.)

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.
THURSDAY, March 6th.—4 P.M., Dr. A. M. H. Gray: Ringworm.

CANCER HOSPITAL, Kensington, S.W.
WEDNESDAY, March 5th.—4.30 P.M., Dr. Stanley Wyard: Cancer of the Stomach.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.
THURSDAY, March 6th.—5 P.M., Mr. W. Gilliatt: Eclampsia and its Treatment.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, W.
TUESDAY, March 4th.—5.15 P.M., Mr. Joseph Barcroft, F.R.S.: The Respiratory Pigments in Animal Life and Their Significance. (Lecture IV.)
FRIDAY.—9 P.M., Dr. Walter Rosenhain, F.R.S.: The Inner Structure of Alloys.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, March 5th.—4 P.M., Dr. B. T. J. Glover: Difficulties in the Campaign against Tuberculosis.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: FEBRUARY–MARCH, 1924.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, March 3rd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Clinical Types of Paraplegia: Dr. Aldren Turner.
TUESDAY, March 4th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Subacute Combined Degeneration: Dr. Adie.
THURSDAY, March 6th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Electrical Reaction of Muscles: Dr. Bailey.
FRIDAY, March 7th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Neurosyphilis: Dr. James Collier.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.
MONDAY, March 3rd.—12 noon, Subacute Combined Degeneration and Other Forms of Combined Sclerosis: Dr. J. G. Greenfield.
The fee for the Course, including Pathology, is £5 5s. For those who hold Perpetual Tickets the fee is £3 3s.

COURSE OF LECTURES ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.
WEDNESDAY, March 5th.—12 noon, Afferent Systems to Thalamus and Cortex.
THURSDAY, March 6th.—12 noon, Cerebral Cortex: Function: Projection Systems: Dr. Kinnier Wilson.
The fee for this Course will be £2 2s.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.
WEDNESDAY, March 5th.—3.30 P.M., Ocular Palsies and Disturbances of Ocular Movement: Mr. Leslie Paton.
The fee for this Course alone is £5 5s. If taken in conjunction with the general Post-Graduate Course the fee is £3 3s. All applications should be sent to the Secretary, Medical School.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.
J. G. GREENFIELD, Dean of Medical School.

VICTORIA UNIVERSITY OF MANCHESTER MEDICAL SCHOOL.
THURSDAY, March 6th.—5.30 P.M., Prof. Fawcett: The Development, Normal and Abnormal, of the Bones around the Mouth.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.
TUESDAY, March 4th.—4.15 P.M., Dr. W. E. Fothergill: Puerperal Pelvic Infection.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE (at Whitworth-street West Branch).
FRIDAY, March 7th.—4.30 P.M., Dr. J. W. Bride: Hæmorrhage in Association with Pregnancy, Labour, and the Puerperium.

ANCOATS HOSPITAL LECTURES.
THURSDAY, March 6th.—4.30 P.M., Dr. Norman Kletz: Rheumatoid Arthritis and Allied Conditions.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)
MONDAY, March 3rd.—(At the Children's Hospital.) Mr. McMurray: Congenital Deformities.
TUESDAY.—(At the Southern Hospital.) Dr. J. H. Mather: X Rays in the Diagnosis of Phthisis.
WEDNESDAY.—(At the Northern Hospital) Dr. Cunningham: Acidosis.
THURSDAY.—(At the Stanley Hospital.) Mr. F. Strong-Heaney: Infections of the Bladder and Kidneys.
FRIDAY.—(At the Royal Infirmary.) Dr. Wallace Jones: Some Points in the Prognosis and Treatment of Kidney Disease.

UNIVERSITY OF SHEFFIELD POST-GRADUATE LECTURES. (At 3.30 P.M.)
TUESDAY, March 4th.—(At the Royal Infirmary.) Mr. Finch: Diagnosis and Treatment of Injury to the Semilunar Cartilages.
FRIDAY.—(At the Royal Hospital.) Prof. Hall: The Clinical Significance of Headache.

DECREASE OF DRUNKENNESS IN RUGBY.—At the annual licensing sessions held recently in Rugby Dr. Clement Dukes, the chairman, commented on the encouraging decrease in arrests for drunkenness in the town for the past decade. The improvement had been steady and remarkable: in 1911, the figures showed a rate of 37 per 10,000 of the population, while in 1921 the proportion had sunk to 4·60 per 10,000. Viewing these facts in their widest interpretation, Dr. Dukes said it was evident that we, as a nation, are sobering ourselves, and have learnt the sensible course of taking a glass too little instead of a glass too much. Prohibition, he continued, was no remedy for drunkenness. State control might, as he had shown, do a great deal, but the highest and best remedy was self-control.

Notes, Comments, and Abstracts.

THE ADMINISTRATION OF BENEFITS UNDER THE NATIONAL HEALTH INSURANCE SYSTEM OF ENGLAND.[1]

BY H. S. BEADLES, M.R.C.S. ENG.,
CHAIRMAN OF THE WEST HAM INSURANCE COMMITTEE; SECRETARY OF THE WEST HAM LOCAL MEDICAL AND PANEL COMMITTEES.

THE primary and most excellent postulate of the National Insurance Act of 1911—the enjoyment of nine pennyworth of benefits for the contribution of 4*d.* per week—has not been realised. Indeed, such realisation was doomed at the birth of the scheme through the dissection of the limbs from the trunk by the instrument creating it. The scheme purports to be national; but there are few, if any, approved societies which represent all classes and types of the insured community. The authors of the Act of 1911, in choosing the friendly and industrial societies as the media for carrying out the administration of cash benefits, ignored the diversity of causes from which the existence of such societies had sprung. Those existing in 1911 owed their origin to a variety of motives. Some were the result of the unity of persons of particular schools of thought, particular trades or callings, of peculiar health standards, and otherwise. Even members of those which purport to embrace individuals irrespective of class or creed must, in their societies' development, become reduced to a common level of health standard differing from that of other societies. Yet all societies are credited with income upon the assumption of a general national average risk, notwithstanding that a preponderance of healthy lives has become grouped together in some societies while a preponderance of unhealthy lives exists in others.

Different Benefits in Different Societies.

Differentiation in the benefits accruing to the insured persons thus becomes inevitable. The member of one society finds himself entitled to extra sick pay, extra disablement benefit, higher maternity benefit, dental treatment, and what not. His brother, having joined a society of less healthy people, finds himself entitled to the minimum benefits under the original Act, to maintain which he is called upon to pay higher contributions under a penalty for non-compliance, of having the required amount deducted a number of times over from any of the said minimum cash benefits to which he may, at some future date, become a claimant.

Examine the provisions for the extra benefits and the penalties for deficiencies to which reference is made, and see how these things have actually worked out on first valuation. Section 37 of the National Insurance Act of 1911 confers powers upon societies showing surpluses on valuation to submit for the approval of the Minister of Health schemes for the distribution of such surpluses by way of conferring upon their members any one or more of the additional benefits set out in Part III. of the Fourth Schedule to the Act. These are: Medical treatment of dependents, dental treatment, increased sick pay or disablement pay, or the payment of such benefits in certain contingencies, increased maternity benefit, convalescent homes, pensions and superannuation allowances, payments to persons in want or distress, &c. It will be seen that these benefits might well be classified as either "benefits in cash" or "benefits in kind." With regard to the deficiencies provisions, Section 38 of the National Insurance Act, 1911, requires societies with expenditures in excess of incomes disclosed by valuation to submit schemes to the Minister of Health for making good the losses, either by compulsory levy or increase of the weekly rate of contribution, by reduction of sick pay, for either the whole, or part, of any period during which such benefit is payable, by otherwise altering the conditions attaching to the payment of cash benefits, or by any other method approved by the Minister.

Valuation Results.

In the Ministry of Health's 1919–20 annual report on national health insurance, particulars are given of the issue to approved societies in England of their valuation reports, and of the initial work in connexion with the adoption of schemes of additional benefits. It appears that the schemes of additional benefits adopted in England do not cover about 1,000,000 insured persons of England. Moreover, the Minister of Health points out in his report that with lapse in membership, and the influx of new members, there is a constant tendency to reduction in the number of members who are entitled to additional benefits during the currency of a scheme.

The degree of confusion into which the so-called national health insurance has sunk will be readily appreciated upon realisation of the extraordinary number of departures from the original benefits offered by the Act of 1911, and the consequent variations in the types of benefits enjoyed by one insured person, compared with another, as disclosed by the official statements of additional benefits. This is the result of the first valuation. If the system is allowed to continue, subsequent valuations can only result in intensification of the confusion.

Can one conceive a more illogical and pernicious system than this? One million persons have been compelled to join groups of their fellows in order to endeavour to insure themselves against contingencies. Having done so, they find themselves made parties to the gamble—"premiums based upon general average risks of the insured community; opposed to contingencies only covered to the limited extent allowed by the average health experiences within the confines of the societies in which they find themselves."

It means, in effect, that if they are members of societies having unhealthy membership, some of their fourpences per week are providing ninepences and more for the members of the societies having healthy membership. In addition, they may be called upon to contribute some additional pennies or so per week in order to become entitled to even the minimum benefits contemplated by the Act.

The extraordinary thing about the situation of these unfortunate victims of the system is that, should they desire and take steps to put themselves on a par with their more fortunate brothers by transferring their membership of society, they find themselves "up against" most formidable forces of obstruction; and even should they by chance overcome these, they only enter new societies upon the condition that they do not participate in any extra benefits that may be enjoyed by the members of longer standing.

Administration of Additional Benefits Unsatisfactory.

The administration of extra benefits, more particularly of those in kind, such as dental and the so-called optical treatment, and nursing benefit, is unsatisfactory. Notwithstanding the provisions of Section 14 (1) of the original Act that additional benefits in the nature of medical benefits should be administered territorially, the approved societies, with utter disregard to the convenience and best interests of their members, laid claim to, and secured, the right to manage dental, optical, and nursing schemes. A completely new business organisation was set up under some such title as "Beneficent Society" purporting to conduct negotiations on terms with representative organisations of opticians and dentists, and otherwise to act on behalf of societies including these services in their schemes. Scales of charges have been prepared and issued to all the societies interested throughout the country. So far as my district is concerned, there appears to have been little, if any, effort made to acquaint the insured persons generally of their rights in relation to either dental or optical treatment or nursing. In cases where the insured person has, by rumour or hearsay, become aware of the means whereby he can obtain these benefits, and has applied for one or other of them with some means of success, his hopes have subsequently been shattered by the unwillingness of his society to pay the whole cost of his requirements as estimated by the dentist or optician, as the case may be. The optical treatment previously mentioned has proved in actual practice to have resolved itself into the supply of glasses by opticians and not to treatment by ophthalmic surgeons. The dangers of this practice cannot be exaggerated, and it is certainly not giving to insured persons treatment equivalent to that available to the ordinary uninsured individual.

There are signs that advantage is being taken of the opportunities afforded by this system of administration to create incentives whereby business is caused to flow to certain establishments to the exclusion of others.

I do not here propose to go very deeply into the subject of deposit contributors. Suffice it to say that the disabilities suffered by the members of a weak society are intensified in the case of these contributors, and under no stretch of imagination can it be said that the contributions extracted from them represent insurance premiums. The better definition might well be the compulsory temporary segregation of wages and trade funds for no good purpose, and without interest-earning power. Yet this class is bound to exist under the approved society system of administration. If a deposit contributor suffers from an unhealthy record, approved societies do not want him, and will not have him. If he enjoys a healthy record, he probably remains a deposit contributor because he wants nothing to do with approved societies.

Section 63.

No Act of Parliament of modern times has conferred a greater power of improving the health conditions of the community at large than that given to approved societies under Section 63 of the National Health Insurance Act, 1911.

[1] An abstract of papers which appeared in the National Insurance Gazette of Dec. 15th and 22nd, 1923.

relating to excessive sickness caused by inadequate public health precautions, insufficient or insanitary housing, &c. Yet in actual practice the approved societies, through the very nature of their constitution and wide membership, are rendered incapable of performing the necessary inquiries, and undertaking successfully the required steps to secure observance of the Public Health or Housing of the Working Classes Laws. Much less can a society consisting of members employed in abnormally unhealthy trades address itself to the problem.

The distribution of cash benefits should be closely linked with the task of restoring the sick to good health, the provision of preventive treatment, and the maintenance of the good health of the community. Every certificate issued by the insurance practitioner represents a cheque drawn upon the insurance bank and the public purse. Approved societies are certainly not the instruments through which such link can be satisfactorily established and maintained.

THE QUEEN'S DOLL'S HOUSE.

To the Editor of THE LANCET.

SIR,—One always hesitates to criticise a chef-d'œuvre, but a work which aims at being an exposition of the perfect house of to-day should be, like Cæsar's wife, above suspicion. The penalty of being an expert is to have to find fault where one would wish to concur, and in regard to one aspect of the domestic hygiene of the Queen's Doll's House the sanitary expert finds himself in this dilemma.

No plan of the Doll's House has been published, but from the illustrations of the actual rooms it can be perceived that the relation of certain apartments could not but seriously qualify the sanitary certificate of an independent professional adviser. That the arrangement in question is expressly against the by-laws has, of course, no force in this instance of a royal palace, and for the expert the question is governed solely by the laws of sanitary science. In modern house-planning de luxe, especially in continental practice, it is becoming very common to discount some of the fundamental principles of sound sanitation, but the fact remains that what may be immediate advantages are only secured at the risk of ultimate danger to health.

It will be seen that the criticism of this letter is actually directed against a modern tendency to relax the vigilance inspired by the work of sanitary pioneers. But the great historical significance of the wonderful achievement of the Queen's Doll's House is, I trust, sufficient justification for my calling in question this one intimate detail of it.

I am, Sir, yours faithfully,

London, Feb. 23rd, 1924. SANITARY EXPERT.

COMPARATIVE MORTALITY IN THE METROPOLITAN BOROUGHS.

IN reply to a question addressed to him in the House of Commons a few days ago the Minister of Health gave comparative figures of mortality in the several Metropolitan boroughs as shown below:—

Comparative Figures of Mortality in Metropolitan Boroughs.

Metropolitan borough.	1918.		1919.		1920.		1921.		1922.		1923.*	
	D.-R.	I.-M.	D.-R.	I.-M.	D.-R.	I.-M.	D.-R.	I.-M.	D.-R.	I.-M.	D.-R.	I.-M.
City of London .. .. Inner and Middle Temples	18·8	158	14·3	115	14·7	71	12·0 10·2	109 —	14·1 13·9	61 —	11·5 3·5	81 —
Battersea	18·7	99	12·9	74	12·4	83	12·2	74	13·2	69	10·7	48
Bermondsey	22·2	134	13·7	92	14·3	85	13·8	93	16·9	100	12·1	73
Bethnal Green	23·9	129	13·9	85	14·6	95	12·9	100	15·3	91	11·3	69
Camberwell	18·3	102	12·6	82	12·5	71	12·1	74	13·5	78	11·0	56
Chelsea	19·5	88	15·0	83	12·0	53	13·6	82	13·5	65	12·1	55
Deptford	18·0	98	13·0	86	12·6	79	12·2	88	13·8	74	10·9	58
Finsbury	23·9	109	15·3	88	15·3	77	14·8	91	16·3	82	13·1	60
Fulham	17·5	109	12·2	82	11·5	74	11·8	84	12·1	69	10·5	63
Greenwich	19·5	118	13·6	94	12·3	72	12·2	75	12·9	57	10·8	62
Hackney	18·9	112	13·1	83	13·0	81	11·5	66	12·8	73	10·6	58
Hammersmith	17·3	102	12·7	99	12·3	67	12·7	88	12·9	71	10·8	63
Hampstead	14·3	77	11·8	83	9·9	48	11·2	66	11·2	56	10·3	42
Holborn	22·7	147	16·4	96	13·9	67	12·8	79	13·3	72	12·1	76
Islington	20·5	110	14·3	86	13·7	72	13·2	82	13·9	76	11·6	66
Kensington	17·8	91	15·3	102	12·5	83	13·8	107	13·6	84	12·0	71
Lambeth	19·3	97	14·8	86	12·8	69	12·2	76	13·8	77	11·4	58
Lewisham	14·8	72	11·6	62	11·0	67	10·5	56	11·2	55	10·3	45
Paddington	19·2	116	13·3	91	11·8	78	12·1	91	13·0	70	11·5	68
Poplar	22·7	110	14·5	84	14·6	82	12·8	83	14·3	79	11·2	59
St. Marylebone	18·7	113	15·7	94	12·5	67	12·9	73	13·8	68	11·5	68
St Pancras	22·3	102	13·4	87	13·5	74	13·0	76	14·6	74	12·6	63
Shoreditch	24·2	163	15·7	106	15·3	91	14·2	111	16·3	103	12·9	80
Southwark	23·5	126	14·9	93	14·9	87	14·3	90	15·6	79	12·8	68
Stepney	20·9	113	14·5	81	14·1	87	13·1	90	14·1	80	11·6	62
Stoke Newington	18·1	93	12·9	65	13·1	80	12·1	54	13·6	67	10·6	48
Wandsworth	15·2	95	11·3	72	10·9	64	10·7	67	11·5	62	10·1	52
Westminster	16·5	108	14·4	91	11·3	73	11·7	81	12·9	55	10·5	46
Woolwich	15·6	106	12·3	86	10·9	61	11·6	62	11·6	62	9·8	57

D.-R. = Total death-rate per 1000 living of all ages. I.-M. = Death-rate under one year per 1000 births. * Provisional.

"ACOUSTIQUE" ELECTRICAL AIDS FOR THE DEAF.

THE Acoustique Company, of 95, Wigmore-street, London, W., have submitted to us a selection from their newest styles of apparatus. They state that they have introduced a new type of transmitter which is now to be employed in all their instruments; it is very light and flat, so that a single transmitter can be worn quite conveniently under the lapel of the coat. The more powerful instruments have three or four transmitters and, in some models, these can be placed in a box for use as a table-instrument or taken out and worn on the person. In one ingenious model the microphones are accessible, so that a broken carbon can be removed and replaced; this should be a great convenience to those living in distant countries, and one may hope that this improvement will eventually be possible on all the apparatus. The table instruments are particularly small, light and powerful, and are fitted with a resistance to moderate the strength of current. In all the tone is round and pleasing, and there is a remarkable absence of "buzz" or extraneous sound; this can be still further eliminated by the use of the "non-head attachment," which consists of an indiarubber tube to be screwed into the receiver and attached to a nipple to fit into the meatus, and which has now been improved by the addition of a hook-shaped metal tube to fit comfortably over the pinna. The prices range from 3½ to 25 guineas.

BLOOD-SUPPLY OF THE BRAIN IN THE OX.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to an article by Dr. Leonard Hill in your issue of Dec. 22nd, 1923, on the Humanity of Methods of Slaughter. I quite agree with the conclusions to which he comes and the suitability of the method of slaughter which he supports, but I disagree with one of his statements of fact. In the section referring to throat-cutting he states that it must be borne in mind that the vertebral arteries do not also supply the brain of cattle, but end in the muscles of the head. This is not so. The vertebral arteries certainly supply the brain of the ox. I have recently dissected these arteries and find that the description and figure in Sisson's "Anatomy of the Domestic Animals" are correct. This book states that a continuation of the vertebral artery passes forwards to the floor of the cranium and concurs with the condyloid and branches of the internal maxillary artery in the formation of a large rete mirabile. The latter takes the place of the internal carotids. It is thus clear that the arteries under discussion carry blood to the brain in the ox as in the horse. But I should expect that the cutting of the two common carotids would bring about such an immediate fall of blood pressure in the common brachio-cephalic trunk that the amount of blood passing to the brain by the vertebrals would be negligible. This is proved by the manometer experiment upon the calf. I am, Sir, yours faithfully,

BERNARD GORTON.

Royal Veterinary College, Camden Town,
Feb. 23rd, 1924.